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THE BOSTON Medical and Surgical JOURNAL

VOLUME 196

MAY 12, 1927

NUMBER 19

ORIGINAL ARTICLES

DUODENAL ATRESIA AND STENOSIS IN INFANCY*

An Important Diagnosis—Case Reports

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CONGENITAL anomalies form an important part of pediatrics and obstetrics and the atresias and the stenoses in the gastrointestinal tract though rare are, nevertheless, serious malformations. In reviewing the literature these anomalies have been found to be more common than was formerly believed. In the case of duodenal atresia or stenosis the only possible cure is by radical operation. Even then only one case of duodenal atresia has survived. The reasons for the high mortality are three-fold; first, faulty diagnosis; second, tardy diagnosis and third, the presence of other anatomical anomalies incompatible with life. There are doubtless many unprobed infantile deaths which, perhaps, could be attributed to atresia or stenosis were autopsies obtainable in all infants dying with obstructive vomiting.

The first authentic description of duodenal atresia was reported in 1733¹. Aubery reported a case seventy years later². Hirschsprung³ in 1862 collected twelve cases proven at autopsy. And since that time the literature has contained occasional reports, becoming richer rather markedly in the past decade.

The symptoms and signs of duodenal atresia and stenosis are important in arriving at an early conclusive diagnosis. First, vomiting since birth must be present in either stenosis or atresia; second, it must be noted whether bile is present or absent in the vomitus (i. e. depending on whether the occlusion is proximal or distal to the papilla of Vater); third, the stools and meconium must be carefully observed regarding the presence of bile (i. e. with bile in both vomitus and meconium there cannot be an atresia or complete occlusion in the gastro-intestinal tract); fourth, a large soft tumor present in the right upper quadrant of the abdomen is often conclusive (dilated proximal loop of duodenum); fifth, visible peristalsis in the epigastrium is not conclusive; and, sixth, inanition and resultant starvation stools will develop in the course of a few days. It is of particular interest

to note the character of the vomitus first thrown up as in a case reported by Little and Helmholtz⁴ the vomiting of clear amniotic fluid gave the clue to a correct preoperative diagnosis. This could mean nothing but high obstruction in the digestive tract. In addition to all these signs and symptoms, the X-ray⁵ can, not infrequently, render valuable information. The earlier the diagnosis is arrived at, the better is the prognosis for the surgeon. Inanition plays an important part in the surgery of infants.

The surgical treatment consists of a carefully regulated preoperative regime of fluid intake by rectum and by clysis. In complete atresia and partial stenosis of the duodenum either a duodeno-jejunosomy or a gastro-enterostomy offers the best possible chance. Whereas, in occlusion due to adhesions or bands, mere lysis of these bands is sufficient. As there is not time the technique of operations for this condition will not be discussed.

In this paper all cases of duodenal occlusion due to torsion of the intestines or mesentery have been purposely excluded, as they present quite a different problem embryologically and surgically.

The pathogenesis of atresia is interesting and important and for that reason I shall devote considerable space for a reasonable explanation. As an introductory statement, it is well to refresh one's mind with some embryological facts. Bland Sutton⁶ as early as 1889 stated, "that malformations occur at the site of embryological events." The formation of the duodenum, pancreas, and liver in the fetus all occur at one sector of the gastro-intestinal canal. It is well to remember also that the fetal liver and pancreas develop at the same time as buds from the digestive tract. And such complex structures budding in such close proximity to one another constitute an important event in embryological development. Aside from the formation of viscera in this portion of the body, it is well to recall that a complex vascular system develops hand in hand with them. A slight anomaly in this vascular bed may play havoc with normal development in the first portion of the intestine. Therefore, the

*Read at the meeting of the New England Pediatric Society, January 14, 1927. From the Surgical Service of the Children's Hospital, Boston, Mass.

duodenum is the site of complex visceral and vascular events in the progress of fetal development.

The duodenum itself during the fifth week of fetal life is completely occluded by an embryonal epithelial proliferation or exerescence. In normal development this should absorb or completely canalize and restore the lumen. In abnormal visceral or vascular development it is readily conceivable that this exerescence might not absorb or only partially absorb and, therefore, establish a complete or partial occlusion. Given a completely occluded lumen of this type, together with an abnormal vascular nutrition, one can readily imagine a necrosis at this point with subsequent healing and the establishment of two blind ends. Given a completely occluded lumen with a slightly abnormal vascular nutrition, one can likewise imagine a partially canalized lumen or a stenosis. This type of stenosis varies in degree from a simple perforated veil to a long narrow thick walled canal. In addition to this type of intra-mural stenosis there is another extra-mural cause for stenosis, mechanical in nature and causing compression; namely, congenital bands. This explanation for atresia and intra-mural stenosis has been described independently by Tandler⁸, Ager⁹, Kreuter¹⁰ and Forssner¹¹. Vascular anomalies explaining this maldevelopment have been described by Wyss¹² and by Little and Helmholtz², entire absence or anomalous course of the gastro-duodenal artery being the striking feature. Explaining the congenital bands Neff and Haden¹⁴ state these persist after the rotation of the stomach and duodenum in fetal life. They should absorb but if they remain they run from the gall bladder and under surface of the liver across the duodenum to the region of the hepatic flexure of the colon. In addition to all this complex growth described above, there is one more factor to bear in mind in the fetal duodenum—its rotation. Therefore, there are four factors leading to the establishment of duodenal atresia or stenosis in the newborn; (1) epithelial exerescences, (2) vascular anomalies in the pancreatico-duodenal region, (3) transduodenal bands and (4) faulty rotation of the stomach and duodenum.

The incidence of atresia in the entire gastro-intestinal tract varies considerably but taking a large mass of statistics it is possible to figure out an approximate ratio. From the Lying-In Hospitals in Boston, Chicago and New York, Quinland¹⁵ reports twenty-seven cases of atresia in seventy thousand births. From the Lying-In Hospitals at Copenhagen, Petrograd and Vienna, Von Koos¹⁶ reports thirteen atresias in three hundred and one thousand, five hundred and forty-one births. Adding all these together gives forty atresias in three hundred and seventy-one thousand, five hundred and forty-one births, or a ratio of 1:9288. These atresias include all from the esophagus to the anus, as well as those in the intervening portions of the

gastro-intestinal tract. Von Koos¹⁶ again informs us that thirty percent of all atresias and about forty percent of all small intestinal atresias are duodenal. Accordingly, about one infant in every thirty thousand births has duodenal atresia. This, I feel sure, is a larger proportion than is realized by a good many clinicians.

It is of interest, also, to note the more common sites of atresia and stenosis in the duodenum. According to Pehu and Auberge¹⁷ and Cautley¹³, the more likely location of such a lesion in a total of three hundred and sixty-four cases is as follows:—

Proximal to the Papilla of Vater.....	40%
Opposite to the Papilla of Vater.....	7%
Distal to the Papilla of Vater.....	34%
Duodenal-jejunal juncture.....	5%
Unclassified.....	14%
Total.....	100%

(81% occur in the first and second portions of the duodenum.)

To these three hundred and sixty-four cases I wish to add twenty-three more recently reported in the literature:—

Quinland ¹⁵	4	Schroder ^{21, 22}	3
Variot and Caillaux ¹⁸	1	Jewesbury ^{23, 24}	3
Von Koos ¹⁶	1	Smellie ²⁵	3
Ritter ²⁶	2	Little and Helmholtz ²	1
Von Reuss ²⁷	1	Ernst ⁴	1
Neff and Haden ¹⁴	3		

To these three hundred and eighty-seven cases I am adding six more from the records of the Children's Hospital, making a grand total of three hundred and ninety-three cases. There are, needless to say, more cases which have escaped notice during this search through the literature. However, it might be well to note that this series includes only those cases of duodenal occlusion in infants resulting from a true congenital atresia and from a congenital stenosis resulting in an intra-mural narrowing or an extra-mural compression by transduodenal bands.

The prognosis is extremely grave for life, especially in atresia, and in stenosis every hope for life without surgical intervention is dependent upon the degree of occlusion. There have been cases of congenital stenosis survive to adult life, one of which was reported as recently as September 1925²⁷. No case of atresia has lived longer than thirty days without surgical intervention. To date there has been but one duodenal atresia surgically cured⁴. The prognosis depends largely upon an early diagnosis. Ernst's⁴ case was operated on the tenth day and recovered. With a large dilated proximal blind end of the duodenum he performed a duodeno-jejuno-stomy in less than an hour, the patient making an uneventful convalescence.

Pyloric stenosis has become a clinical entity which is now recognized early enough to give a low operative mortality (between five and ten

percent in all recognized pediatric clinics). Duodenal atresia has a mortality of over ninety-nine percent. Even though the surgical procedure is much more radical than the pylorotomy for pyloric stenosis, if the surgeon be given an early opportunity in duodenal atresia there should be a reduction in this mortality. However, with multiple atresias or with the presence of other anomalies a problem incapable of solution is presented.

In differentiating duodenal atresia or stenosis



FIGURE I. The stomach and duodenum of Case 3. The arrow points to the stenosis. The point of probe is perforating the small hole in the obstructing veil, or septum.

from the well known pyloric stenosis, it is well to bear in mind several features. Vomiting since birth, the character of the vomitus especially the first vomitus and the presence of bile is all important. The study of the meconium, whether or not it contains bile, is likewise an essential point of differentiation. The character of the tumor, if present, will often give a clue. The type of peristalsis and the rapid loss of weight is similar in both conditions but the X-ray picture should be able to help us in making a correct diagnosis.

Conclusions.—Congenital duodenal atresia is more common than is ordinarily considered, occurring in one of every thirty-thousand births.

Its diagnosis is difficult and perplexing but should be made preferably before the tenth day of life if surgical aid is to be of avail.

The only possible cure of atresia or intramural stenosis is by the radical operation of duodeno-jejunostomy or gastro-jejunostomy. Occasionally a stenosis caused by a veil in the lumen of the duodenum might be dilated, relieving the obstruction. Extra-mural duodenal sten-

osis caused by transduodenal bands may be cured by lysis of these fetal remains.

Out of three hundred and ninety-three cases of duodenal atresia and stenosis there has been but one case of true atresia cured.

The vascular supply to the fetal duodenum is considered to be an important factor in the etiology of congenital duodenal atresia and stenosis.

In closing I wish to take this opportunity to thank Dr. James S. Stone for one case and Dr. William E. Ladd for two cases taken from their private records and reported in this paper.

CASE 1. A. J., 5 days, No. 598, June, 1919.

C. C. Patient was brought to the hospital because of vomiting. He was five days old. Physical examination was entirely negative. While in the hospital the child continued to vomit meconium. Further physical examination continued to be negative.

Autopsy showed transposition of the stomach and occlusion of the pylorus.

Pathological Examination:—On first impression



FIGURE II. The stomach and duodenum of Case 3. The arrow points to the stenosis. The point of probe is pushing the veil or septum upward.

the striking thing about the contents of the peritoneal cavity is the small, foetal-like intestines and the absence of any greater omentum. The duodenum is represented by a strand of fibrous tissue. The pancreatic and common ducts empty into the fundus of the stomach. Appendix is normal.

Gastro-intestinal Tract:—At the lower end of the esophagus there is a diverticulum 1 cm. in diameter, which consists of a rounded growth of several aggregated pale cysts one to three mm. wide. There is a communication with the esophagus, but nothing can be pressed from the diverticulum into the

esophagus. The stomach is of normal size but lies on the right side of the median line with the convexity of its greater curvature pointing upward. On section the pylorus is a test-like prolongation; the duodenum is represented for 2 cm. of its length merely by a strand of fibrous tissue and on opening the ileum and progressing upwards toward the duodenum a point is suddenly reached about 2 cm. below the pylorus, where the lumen of the duodenum is



FIGURE III. The organs of Case 1. Note the duodenum represented by a fibrous cord.

suddenly found occluded by fibrous tissue and the duodenum tapers off to a fibrous strand.

CASE 2. E. D., 2 weeks, No. 77548, December 4, 1924.

C. C. This child has vomited almost everything since birth. She has been under the care of L. M. D. who has tried various and sundry feedings all with the same results and the child has been losing weight rapidly in the last week.

P. E. shows a thin baby, moderately drained out and undernourished. P. E. negative except for local examination which showed visible peristalsis but no tumor could be felt.

Operation December 4th, 1924. Preoperative Diagnosis:—Pyloric Stenosis. Postoperative Diagnosis:—Adhesions transcussing duodenum for which exploratory laparotomy and lysis of adhesions was done.

Operation Notes:—Ether anesthetic. High right rectus incision made. Peritoneum opened. Pylorus delivered into the wound with considerable difficulty on account of some bands transcussing the junction of the pylorus and duodenum. These were freed slightly to allow inspection of pylorus. No pyloric tumor found. Bands around the pylorus were freed and then the wound was closed in layers.

Discharge Note:—Child improved; gained weight, and there was no vomiting. Discharged home in well appearance.

CASE 3. D. D., 17 days, No. 85556, August 3rd, 1925.

C. C. There has been continued loss of weight since birth. Baby taken off breast milk due to continued vomiting, and has done no better on formula. Stools:—four days ago with enema, three days ago with suppositories, two slight voluntary movements three days ago; but no stools since then.

P. E. shows an undernourished child showing marked recent loss of weight. No jaundice.

Operation:—Pre-operative Diagnosis:—Pyloric Stenosis. Post-operative Diagnosis:—Pyloro-spasm.

Operation Notes:—Ether anesthetic. The usual pyloric incision was made in the right upper quadrant. Peritoneum opened, liver edge presented in the middle of the wound, pylorus delivered and no tumor found. There were a few filament-like adhesions in the first portion of the duodenum apparently holding this up to the liver. These were readily broken and wound closed.

August 11th, 1925. X-ray report:—Examination of gastro-intestinal tract shows large dilated stomach and considerable fluid residue. It lies transversely and the pylorus seems somewhat deformed in shape and out of normal position. Large six hour residue and at the end of eighteen hours about half of the barium lies in the stomach. Findings suggest obstruction or malformation of the pylorus or duodenum. Small amount of barium present in large bowel.

August 13th, 1925. Post-operative Note:—Patient gained weight progressively, no stools and continued vomiting. Bile present in vomitus.

August 15th, 1925. Exploratory Laparotomy.

Pre-operative Diagnosis:—Congenital Duodenal Stenosis.

Notes:—Ether anesthetic. Right rectus incision, pylorus has no tumor. The first part of the duodenum somewhat dilated; marked narrowing evident in the second part of the duodenum. On account of the child's poor condition and the very small jejunum, gastro-enterostomy was not considered feasible. Levin tube inserted.

August 19th, 1925. Vomiting has persisted; child kept alive by intra-venous glucose and saline; passing an occasional stool.

August 20th, 1925. Jejunostomy performed. Operation notes: High right rectus incision; considerable number of adhesions found around the pylorus, no tumor. The first part of the duodenum is somewhat dilated; apparently a stricture as the duodenum passed underneath the mesentery of the colon. On account of the infant's extremely bad condition and the small size of the jejunum it was deemed wisest to try to do a jejunostomy and possibly a gastro-enterostomy later.

Child died on the day of last operation.

Pathological Examination:—A-25-115.

Gastro-intestinal Tract:—The stomach contains a considerable amount of light green fluid. The pylorus is not constricted but on the contrary appears somewhat dilated and its wall is distinctly thickened. The first portion of the duodenum likewise appears distinctly dilated. In the region of the ampulla of Vater, however, there is marked constriction not permitting the passage of a probe. The lumen is seen to be blocked at this point by a membranous band which extends across the lumen of the duodenum at an angle of forty five degrees. In the center of this, thin, transparent membranous band, is a minute, pin-point opening which may or may not have been produced by probing. The lumen of the duodenum is considerably narrowed at this point but it would appear that it would not have offered much

resistance to the passage of food except for the membranous band extending across it. The duodenum from this band downward as well as the entire small intestine, is somewhat atrophic and its lumen is patent throughout. No further evidence of obstruction is found.

shows upper abdomen above the level of the costal margin, is distended. Lower abdomen carinated; belly wall rigid, no masses. Umbilical cord stump still intact. No peristalsis seen.

Pre-operative Diagnosis:—Intestinal Obstruction.
Operation:—Ether anesthetic. All of the small in-

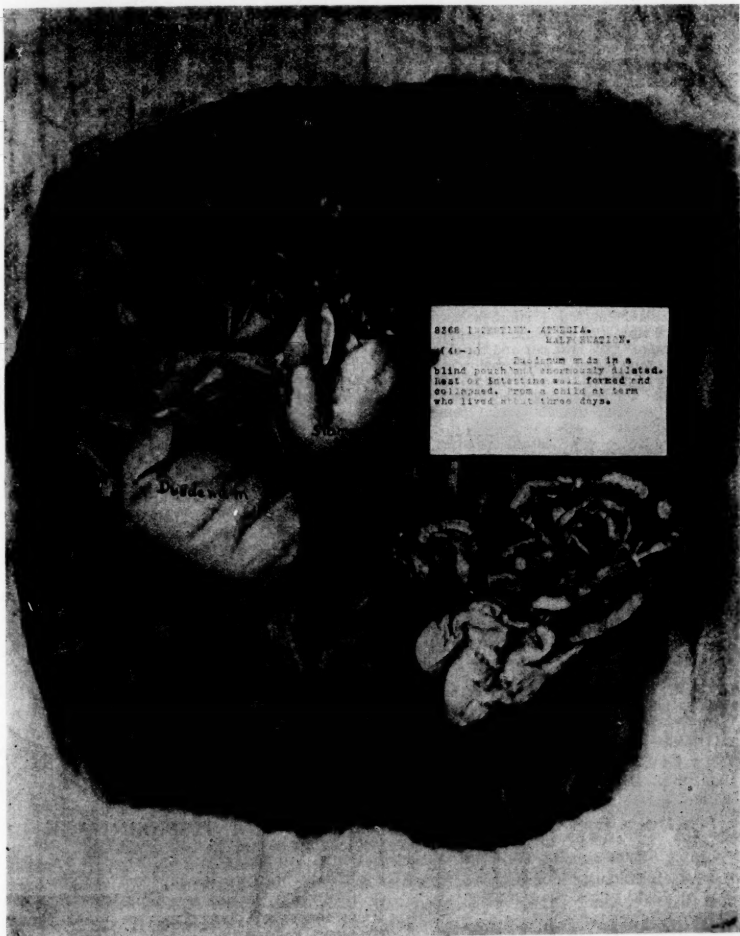


FIGURE IV. From the Warren Museum a specimen of duodenal atresia. Note the large cul-de-sac of the proximal blind end of the duodenum. Note the small distal blind end of the atresia. This demonstrates a situation extremely difficult for the surgeon to perform an entero-enterostomy.

CASE 4. I. L., 4 days, No. 41314, August 24th, 1925.
C. C. No bowel movement or meconium since birth. With the aid of enemata given by L. M. D. a small amount of black, sticky material was obtained. Baby nurses and holds feedings about one hour and then vomits milk and dark, sticky material, no blood.
P. E. negative except local Examination, which

testes were found collapsed, the lower sigmoid was found rudimentary, the stomach was found tremendously dilated and thickened. Examination of the duodenum shows it to be represented by a small rudimentary bowel with obviously little or no lumen. Gastro-enterostomy was the only possibility for relief but was not attempted because of the condition

of the sigmoid; combination incompatible with life.
Post-operative Diagnosis:—Stenosis at the duodeno-jejunal juncture with rudimentary ileum, caecum, colon and sigmoid.

Patient died the next morning. No autopsy permission was obtainable.

CASE 5. Baby M., 7 days, No. 2653, May 26th, 1926.

Baby born one week ago, easy normal delivery. Following birth baby has vomited everything taken by mouth and has lost one pound in weight. If given more than one ounce of food at a time it all comes back immediately. She will occasionally hold one ounce exactly for fifteen or twenty minutes and then vomits.

Examination:—Bismuth meal shows a small stomach and a very small amount of bismuth trickling out through the pylorus and duodenum. On palpation there is no pyloric tumor felt. Small peristaltic waves were seen high up in the epigastrium. Icterus neonatorum present. Practically no stools since meconium first passed which was normal in every respect.

Operation:—May 26th, 1926. Lysis of adhesions under ether anesthesia.

Operation Notes:—High right rectus incision, peritoneum opened, stomach examined and found to be moderately dilated. Pylorus examined and no tumor present. Adhesive band found running across the duodenum just below the pylorus. It appeared to constrict the lumen. This was cut and the duodenum opened and a sound passed down below to make sure that there was no further obstruction which this determined. This small opening was closed with a purse string suture and the abdominal wound was closed without drainage.

Post-operative Note:—The infant vomited, after operation, both feedings that were given. Seen late in the afternoon and seemed to be in good enough condition.

One-half hour later child failed rapidly, respirations became gasping and patient died.

CASE 6. Baby B., male, 6½ days, May 11th, 1915.

The baby passed considerable neonium at birth and since then two or three small dark-greenish mucous movements daily. It began to vomit the third day in the afternoon but up to that time had not thrown up even water. The vomitus was greenish at first and everything which has been vomited since was always of light greenish tinge. Vomiting is not explosive. Temperature ran between 102° and 103° on the fourth and fifth days but has been normal since. The baby has lost considerable strength in the last

twenty-four hours. Visible peristalsis had been seen above the navel this morning. Abdomen is said to be more full on the left than on the right.

Physical Examination:—Dehydrated baby, showing evidence of marked malnutrition. The abdomen was sunken and entirely negative. No visible peristalsis and no tumor palpable. Vomitus inspected and contained bile. Stools inspected and were small very dark green in color and composed of mucous.

The next day a surgeon was called in and an exploratory laparotomy performed.

Operation:—The duodenum was found in its second portion to end in two blind ends. There was normal development on each side of the gap. The rounded blind ends were not connected but lay practically in contact with each other. An end to end anastomosis was performed and the wound closed in layers.

Post-operative Note:—The baby rallied after the operation but died in about twenty hours.

Post-operative Diagnosis:—Congenital Duodenal Atresia.

BIBLIOGRAPHY

- 1 Calder: *Jour. of Med. Essays*, Edinburgh, 1723.
- 2 Aubrey: Quoted by Cautley, *Brit. Jour. Child. Dis.*, 15:5, Apr., 1919.
- 3 Hirschsprung: Quoted by Cautley, *Brit. Jour. Child. Dis.*, 15:5, Apr., 1919.
- 4 Ernst, N. P.: *Brit. Med. Jour.*, 1:644, 1916.
- 5 Little and Helmholtz: *Bull. Johns Hopkins Hosp.*, 16:249, 1905.
- 6 Bosch, E., and Schintz, H. R.: *Deutsch. Ztschr. f. Chirurg.*, 159:284, 1920.
- 7 Bland, Sutton: Quoted by C. H. Schroder, *J. A. M. A.*, 15:1039, Apr., 1922.
- 8 Tandler: *Anat. Anz. Ergänzungsheft*, 18:42, 1900.
- 9 Ager: *Arch. Pediat.*, 27:135, 1910.
- 10 Kreuter: *Habilitationschrift* Erlangen, 1905.
- 11 Forsman: *Nordisk. Medicinsk Arkiv*, 1905.
- 12 Wyss: *Beitr. z. klin. Chir.*, 26:43, 1900.
- 13 Cautley, E.: *Brit. Jour. of Child. Dis.*, 16:184, Apr., 1919.
- 14 Neff, F. C., and Haden, R. L.: *Am. Jour. of Dis. of Child.*, 30:82, July, 1925.
- 15 Quinlan, W. S.: *Boston Med. and Surg. Jour.*, 187:819, Dec., 1922.
- 16 Von Koos, A.: *Jahrb. f. Kinderh.*, 93:240, 1920.
- 17 Fehn and Auberge: *Arch. de med. d. enf.*, 27:321, June, 1924.
- 18 Variot and Calliaux: Quoted by *ibid.*
- 19 Ritter, Carl: *Jahrb. f. Kinderh.*, 91:369, 1920.
- 20 Von Reuss: *Dis. of the New-born*, Bale Sons & Danielson, Ltd., 1920.
- 21 Schroder, C. H.: *J. A. M. A.*, 76:1029, Apr., 1922.
- 22 Schroder, C. H.: *J. A. M. A.*, 82:686, Mar., 1924.
- 23 Jewsbury, R. C.: *Proc. Roy. Med. and Chir. Soc., London*, 16:10, 1922 (Section Dis. Child.).
- 24 Jewsbury, R. C., and Page, M.: *Proc. Roy. Med. and Chir. Soc., London*, 16:50, 1922 (Section Dis. Child.).
- 25 Smellie, J. M.: *Brit. Jour. of Child. Dis.*, 21:192, 1924.
- 26 Faber, K. G.: *Jahrb. f. Kinderh.*, 91:375, 1920.
- 27 Nagel, C. W.: *Arch. of Surg.*, 11:529, 1925.

BOSTON CITY HOSPITAL STAFF CLINICAL MEETING

JANUARY 29, 1927

SERIES OF CASES OF GASTRO-INTESTINAL HEMORRHAGE

DR. F. W. PALFREY: On the First Medical Service we seem to have a run of cases of gastrointestinal hemorrhage. Probably because of Dr. Larrabee's interest in blood diseases, cases where the question of blood transfusion comes up are apt to be put on the First Service. In connection with these there are two points which I want to make.

The first is that although most of us think of gastric ulcer as a matter of pain occurring after eating, there certainly are cases in which pain is not prominent. This fact I first had clearly

brought to my attention when I was working with Dr. Maurice Richardson. In the course of three years he had seven patients in whom, in the course of operations for other conditions, ovarian tumor, fibroids, gall bladder disease, etc., inspection of the stomach showed typical ulcer. It was his practice not to tell me what he had found but to send me to see those patients and to get a gastrointestinal history. And in those cases, or in the majority of them, there were no digestive symptoms. So there are instances of peptic ulcer in which the typical symptoms of pain are not present. But every now and then some of these cases without symptoms enough

to cause a previous diagnosis of ulcer have a perforation and come to surgical treatment; and, still more first manifest themselves by hemorrhage. To the latter class this patient and perhaps the two others belong.

The other point that I wish to make, and I will mention it now because it does not apply to this patient, is that I think I can recognize a group of gastrointestinal hemorrhages which occur in connection with alcoholism, but without cirrhosis. At least in these cases we fail to get any evidence of cirrhosis, and they all get well without further symptoms. Very possibly these have acute ulcers or erosions induced by alcoholism. That is only a tentative classification, but it seems to be more than a coincidence that we see gastrointestinal hemorrhage in so many alcoholic patients who have an absence of gastrointestinal symptoms after their hemorrhage is controlled and after they are put on an ordinary diet.

This patient is 45 years old, without alcoholic history and completely without gastrointestinal symptoms previous to the present illness. This history was taken on January 3rd. "Four days ago after supper while sitting down his hands began to sweat. He was nauseated and vomited blood and food, half a quart to a quart. He felt dizzy, but did not vomit but once. He slept all night, but felt weak; he did not feel thirsty. The next day, two hours after supper, his head began to swim and his hands to sweat. He was nauseated and vomited a pint. Two days before admission he vomited blood again; the day before admission he did not vomit. Stools were dark chocolate black in color." Without previous symptoms, it was simply a matter of vomiting blood and there has been nothing to tie it to, before or since. He came in very pale, but in no acute distress or pain.

A point worth emphasizing to students is that the testing of hemoglobin immediately after a hemorrhage is of no value in deciding how bad the hemorrhage is. If you have a pitcher full of a certain colored solution and pour half of that solution out, what is left remains of the same color; and immediately after a hemorrhage the blood remaining in the body is of the same color as before. So the test for hemoglobin is of no value until the blood that remains has been filled up to normal volume by water.

On admission his hemoglobin was 45 per cent. The next day it had gone down to 30 and a transfusion was done. After transfusions the hemo-

globin rose to 45 per cent and has since increased to 55 per cent with a red count of 2,500,000. He has been through the regular Sippy program and has done well without symptoms.

The other two cases are less distinct. Both are men in whom the ingestion of alcohol has been habitual. In this man no previous history has been obtained of disturbance of appetite, nausea, vomiting, diarrhoea or other digestive complaint. He has been constipated. He was admitted on Jan. 19th. On that day he drank some water and regurgitated it, and a few minutes later he vomited a quart of dark red blood. It was vomiting, not cough. He then took a glass of milk and vomited in ten minutes some more blood; there was no pain, but soreness after vomiting. That is practically all there has been to his history. The amount vomited has probably been exaggerated because his hemoglobin since admission has been 70 per cent. He has had no further symptoms.

The second patient came in giving a story of pains in the chest since last April, with an intermittent hacking cough. He has signs of thickened pleura, and we shall have to investigate further as to the pulmonary condition. But throughout his history there is no mention of gastrointestinal symptoms except, in answer to the routine questions,—"appetite good, bowels regular. Three days ago some regurgitation and some belching of gas." But immediately after admission he had a considerable hemorrhage by the intestines, not repeated. Presumably it occurred all at once although the stools for three days gave positive reactions for occult blood. It has not been necessary to transfuse him. We have found no reason to believe that there is cirrhosis, neoplasm or intestinal tuberculosis. My presumption is that his case is one of these alcoholic indigestions or ulcers with hemorrhages which seem to me to form a definite class.

Our routine treatment in cases of gastric hemorrhage is to starve them for 24 hours, which in my opinion is wiser than putting them immediately on the Lenhartz schedule; then we follow the Sippy schedule, with or without transfusion. This, in the present cases, has led to an uninterrupted improvement. In none of these have we wanted to disturb their inside workings by having a barium series as yet, so that we can not positively exclude neoplasms in any of them; but, so far as the evidence goes, there is less suspicion of tumor than of simple ulcer.

THE TREATMENT OF MALIGNANT AND NEAR MALIGNANT GYNCOLOGICAL CASES*

DR. N. R. MASON: I desire to show you a series of malignant and near malignant cases particularly from the standpoint of treatment. Dr. O'Brien will speak about their treatment with radium and X-Ray.

This patient, 20 years ago, was operated upon

by Dr. Charles M. Green for the removal of a urethral caruncle; 15 years ago the growth was again removed by Dr. Frederick Good; and, 12 years ago, I performed a more radical removal—the patient tells me now that I removed the entire urethra. Ten years ago she was treated for a recurrence of the growth with red hot

*From the Clinic of the Boston City Hospital.

needles by Dr. Young. Six years ago she came back with a caruncle re-developing, and because of the previous failure of all operative attempts I felt it was wise to try the effect of radium. Four years ago she returned with a radium ulcer, still unhealed after a period of two years. At this time I removed the ulcer, cutting a wide distance outside the base. Now she comes in after these many operative failures with this typical caruncle of the size of a small pea springing from the left side of the urethral meatus. You can see how readily this can be pushed aside by a piece of gauze. The urine, however, does not push the caruncle aside so readily because in her attempts at micturition she suffers the classical agony which is produced by a caruncle blocking the urethra as this one does. Day after tomorrow I propose to infiltrate the base of this tumor with novocaine and send her to the Department of Physio-Therapy where Dr. Granger expects to treat and cure this caruncle with diathermy.

The next case is a school girl of 16 referred from the Dermatological Service. Two months before admission she noticed a small wart on the genitals which spread rapidly until it had reached its present condition (showing the vulva which presents two masses the size of fists). I was brought up to call this condition venereal warts or condylomata; now I find the dermatologists expect us to use the term "verruca acuminata." The condition has increased markedly and she presents a line of warts on the outer side of the right labium. It is difficult to keep the parts dry and clean, which means that the lesions flourish. My treatment hitherto has always been that of radical operation, but I feel here that I could accomplish but little by operative measures except by performing a complete vulvectomy, which I hesitate to do in this child. I have received considerable hope from the Departments of Roentgenology and Physio-Therapy relative to what treatment may do. With the memory of the radium ulcer fresh in my mind, I am inclined to ask Dr. Granger to treat her, which he proposes to do by fulguration day after tomorrow.

The next patient is a colored girl who entered the hospital November 23rd. For two years prior to entrance she had been having recurrent attacks of pain above the symphysis radiating to the right lower quadrant. These attacks were accompanied by vomiting. She presents on vaginal examination a large cauliflower growth which completely fills the vagina and bleeds readily on digital manipulation. It is clearly an inoperable condition, as far as cure is concerned, but operative measures will afford temporary relief. This growth was morcellated and tissue the size of an egg was removed. The origin of the growth was shown to be from the cervical canal. The patient remained in the hospital for several weeks, running a slight temperature, then went home. She has now returned

for radium treatment. She still continues running a temperature in the vicinity of 100° and her pulse rate is 120. We all agree that it is unwise to carry out any radium treatment in this case, as it is quite likely to stir up pelvic inflammation and make the patient much sicker. Radium treatment, if given in this instance, might well be the causative factor of a terminal complication. We have in the past seen some cases succumb under a radium treatment, so in this instance no methods of relief are available—we can only give her morphia to limit the pain.

The next patient, a woman of 40 and married for 20 years, came to the hospital January 14th. The family and previous histories are negative. The patient has always been irregular in her menstrual periods, the periods occurring from three to five weeks, but during the past year she has been flowing more frequently. There has been a loss of 16 pounds in weight, weakness has developed in the last month and there has been increasing pallor. Of late she has been flowing practically all the time. She has had six normal full term deliveries. Vaginal examination shows a friable mass completely filling the vagina with a crater in the left side which bleeds readily. The condition is clearly one of inoperable malignant disease of the cervix. The patient has been running a temperature of 100° to 101° since admission. Her general condition is poor and the cachexia has increased. Blood examination shows a hemoglobin of 45 per cent and a red blood count of 2800000. I show this patient to illustrate again the fact that Dr. O'Brien and I feel strongly that in such a patient with advanced local findings, elevated temperature and rapid pulse radiation is manifestly improper. Such treatment would probably make her worse and very likely result fatally. We can do nothing in this case excepting make the patient comfortable with drugs, morcellate, and cauterize locally in case of vaginal hemorrhage.

The last patient I supposed was a favorable case for the radical removal of the uterus for malignant disease of the fundus. She is a woman of 50, who has had regular menstruation until two years ago. She stopped for ten months, then flowing reappeared and some staining occurred almost daily for five months. After that there was a cessation of bleeding until six weeks ago when it reappeared and has persisted daily to the present time. There have been four children at full term. She presents on local examination a multiparous perineum with a fair body and a moderate bilateral tear of an indurated cervix. The uterus, which is felt with difficulty, is not enlarged, is retrocessed and is fairly movable. No infiltration made out in the vaults. There is profuse flowing of dark red, clotted blood, and a lemon yellow tint of skin. With this story of bleeding and her color, I supposed that we were dealing with a case of malignant disease. Dr. Lynch curetted her and much to

our surprise we obtained almost no tissue by curettage but, fortunately, enough for Dr. Mallory to report "hypertrophic endometritis" and possibly "sub-mucous polyp." Dr. Larrabee in consultation says that the anemia is probably secondary although there are some discrepancies in the blood. There is a hemoglobin of 45 per cent and a red blood count of 2,400,000.

In dealing with malignant cases of cervical disease, I believe that our department stands alone in its view of radical removal in contrast to the now generally acknowledged treatment of palliation with radium. We feel strongly that where the case presents any hope of eradication of the disease, or the major part of the disease, it is better to perform as radical an operation as possible and then radiate the case later.

DR. F. W. O'BRIEN: Dr. Mason suggested that I say something about the method now in use in the treatment of carcinoma of the cervix with radium at this hospital. We have only 100 mgm. of radium for use here, which is in needles. We are limited to that amount, so we have to do the best we can with it. It has seemed now for some time that heavily filtered radium gives the best results, so we have done away with the use of the bare needles in the treatment of cervical disease. With bare needles one is almost sure to get slough and intense pain, which only add to the difficulties of the patient. We place our needles of radium in a brass capsule of a definite thickness and definite known filtration. The brass capsule is used to screen out beta radiation. This beta radiation is one of the types of radiation given off by radium and corresponds to the long wave lengths of X-rays. It is the kind of radiation which gives one a burn. By screening out with brass, we get only the short wave lengths, the gamma rays, which are the effective ones, and the ones we want to use. When gamma rays come in contact with matter, they give off secondary rays, so we cover the brass capsule with rubber tubing to absorb and so do away with this harmful secondary radiation. We place 50 mgm. in the cervical canal, when possible, screened as described above. Then we prepare 50 mgm. more, screened by a brass capsule and this is imbedded in modeling compound which is molded to fit comfortably against the cervix. The modeling compound used is similar to that used by dentists except that it does not contain antimony or any similar metallic radical. We do not want to be misled by secondary effects from any such mineral-containing compound. The modeling compound does several things. By its use we can gain distance, which is helpful in giving homogeneous radiation. It also screens out secondary rays. Outside of this again we place sheet lead to protect the vaginal and rectal walls which we try to pack off carefully. I feel that our poor results heretofore have been due

to using unfiltered radium which has remained in situ too long, thus producing slough, fistula and pain. It is interesting to get the view-point of nuns and lay-nurses, who take care of cancer cases. They have told me repeatedly that patients seen by them nowadays appear to be much more uncomfortable than before the advent of radium and X-rays, and the reason for this is undoubtedly that the patients have been overdosed. Dr. Mason has showed several cases today where the blood picture was already low and which we do not feel are suitable for radiation. If we were to give these patients X-rays and radium, we would probably produce a cachexia. This type of patient is better off untreated. If a patient's blood picture is favorable, we endeavor to use 100 mgm. of radium, all that is available in this institution, screened, with vaginal and rectal walls protected as we have described, and we allow this to remain in position 24 hours. Later high voltage X-rays are directed to the uterine adnexa.

QUESTION: How long did you say the radium is left in place and what is your dose?

DR. O'BRIEN: We give approximately 2400 mgm. hours and allow the radium to remain in place 24 hours.

QUESTION: How does that dosage compare with that of other institutions? It seems like a very small dose.

DR. O'BRIEN: At the Memorial Hospital in New York, they give as high as 6000 millieurie hours. They are using emanation entirely, and, because of their very rich supply of radium, they are in a position to use this heavy dosage on several patients at a time. As we are situated here, if we have one cancer of the cervix, our entire amount of radium is tied up for 24 hours.

DR. OTTO HERMANN: What success are you having now?

DR. O'BRIEN: I think our success a relative one. The surgeon may argue his good results as well as the radiologist. The good result will depend upon the type of case, that is, its pathological classification, and on the progress made by the disease at the time it is seen. The radiologist as well as the surgeon bemoans the fact that he sees malignant disease so late. As a generalization, I believe carcinoma of the cervix treated by radiation, by and large, does better than with surgery.

DR. OTTO HERMANN: Why not the two, radiation and then surgery?

DR. O'BRIEN: In many clinics, that is the routine.

TWO CASES OF BRAIN TUMOR*

DR. STANLEY COBB: These two men are of interest because they are in the neurological ward at the same time and are much alike. 1 will outline their histories in parallel columns:

strated by these ventriculograms, are dissimilar.

This first ventriculogram (Figure 1) is that of the younger stouter man. The ventricle is of

	CASE 1—Age 27	CASE 2—Age 36
Fits	General convulsions 3 years, about 1 a month, increasing to 11 in last month.	Spells of unconsciousness with amnesia 9 years, recently a few convulsions.
Behavior	"Losing interest" for 3 years.	Dull for last 4 years.
Memory	Falling recently.	Falling for 2 or 3 years.
Hallucinations	Light flashes and visions of people for last few months.	Vivid visual for 9 years.
Headache	Three weeks.	Four months.
P. E.: Facies	Apathetic.	Exophthalmos and apathetic.
Reflexes	Increased on right side. Oppenheim on right.	Slightly hyperactive. ? Babinski.
Motor	Dysmetria—right arm.	
Fundi	Choked disc.	Choked disc.
Fields	Normal.	Normal.
Mental	Apathetic. Memory poor recently.	Vague, drifts off into dreams. Poor memory for 3 or 4 years. Perseveration in writing.
Spinal fluid	Pressure 500 m.m. Otherwise not remarkable.	350 m.m. (pressure). Otherwise not remarkable.
Ventricular	Pressure 400 m.m.	Pressure 350 m.m.

Those are the histories and they are interestingly alike. Both show well the inexpressive facies—the so-called "neoplastic facies." It is interesting that neurological examination shows so little, but this very dearth of positive findings helps us to rule out many parts of the brain in our localization.

On this much evidence, we diagnosed Case 1 as having left frontal lobe glioma, and Case 2 as having a mid-line frontal

normal size but appears to be deeply placed. In addition there is questionable evidence, in other views, of some slight distortion of the anterior horn of the left ventricle. If that were all that we had learned from this operation it would hardly be worth while. It happens, however, that the injection of the air is only part of the story. At the same time one can learn in addition the depth and situation of the ventricles, the pressure of the fluid, the possibility of an intra-ventricular block and finally the chemical content of the cerebro-spinal fluid that

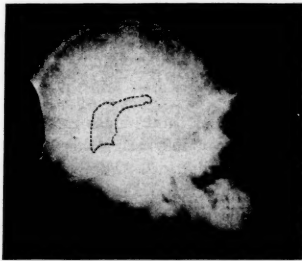


FIGURE 1. CASE 1.

lobe neoplasm, affecting both lobes. The evidence by the X-ray is very interesting, and Dr. Munro will tell you of his ventriculograms.

DR. DONALD MUNRO: These two men, as was pointed out by Dr. Cobb, show marked clinical similarities yet their true conditions, as demon-

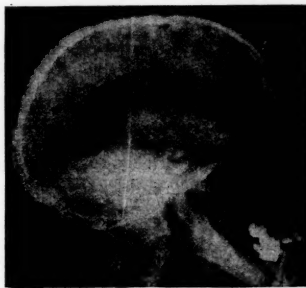


FIGURE 2. CASE 2.

is removed. In this particular instance I was able to determine that the ventricles were deeply placed, and pushed somewhat to the right;

*From the Clinic of the Boston City Hospital.

that the ventricular fluid was under high pressure, with free communication between the ventricles; and, that the chemical content of the fluid was the same in both ventricles. Summing up the evidence obtained from this procedure, this man had increased intracranial pres-



FIGURE 3. CASE 2.

sure without hydrocephalus but with a deviation of the ventricles to the right and a possible pressure deformity of the left frontal horn. Reduced to terms of diagnosis this evidence points very directly toward a tumor of the left frontal lobe.

The ventriculograms of the other man, how-

ever tell a different story in spite of the similarity of symptoms. Figure 2 is the lateral view of the left ventricle. This shows a large hydrocephalic ventricle with a rounded tumor standing up in the centre of what appears to be a much enlarged third ventricle. Figure 3 is the view of the anterior horns and shows the anterior edge of this same rounded tumor, outlined plainly against the surrounding air. In addition there was an increase in intracranial pressure with free intra-ventricular communication, abnormally large ventricles with no obvious displacement and the same chemical content in the fluid of each ventricle. Summing this evidence up: this patient had a hydrocephalus with increased intracranial pressure involving especially the third ventricle, which also contained an abnormal tumor mass. A diagnosis of tumor of the third ventricle associated with an obstructive hydrocephalus is evident.

Subsequent note—At operation the first case was found to have a glioma (*Spongioblastoma Unipolare* type) of the anterior superior portion of the left frontal lobe, close to the median line. This was successfully removed.

In the second case an attempt at operative removal of the third ventricular mass—through the corpus callosum—was attended by a fatality. Autopsy, however, disclosed a cyst of the 3rd ventricle which blocked the upper end of the iter and which, in the gross, appears to be of ependymal origin.

SUBPHRENIC ABSCESS FOLLOWING APPENDIX ABSCESS DURING PREGNANCY*

DR. HORACE BINNEY: This patient has been an interesting one to follow and presents one of the possibilities following retrocecal appendix abscess. I remember years ago having a case I felt sure was a perinephritic abscess. I was surprised to find nothing in the urine, but thought it was a case of pyelitis with a blocked kidney and perinephritic abscess. At operation a typical appendix abscess was found and a retrocecal gangrenous appendix, which was removed with recovery.

This patient was admitted to the Gynecological Service on December 18th, complaining of pain in the costovertebral angle. She was seven months pregnant. She had definite pain and tenderness on admission; and, thinking it was a renal affair, she was cystoscoped. Following that, she miscarried. Cystoscopy and ureteral catheterization were negative, but that failed to rule out the possibility of a blocked kidney. In the course of a few days her temperature rose, and, as her condition became much worse, she was operated upon. The incision was made in the flank in the region of the tender mass, a large amount of pus was evacuated, and drainage instituted. A few days later she began to

cough up pus which had the same character as the pus in the abscess. It was suggestive of a

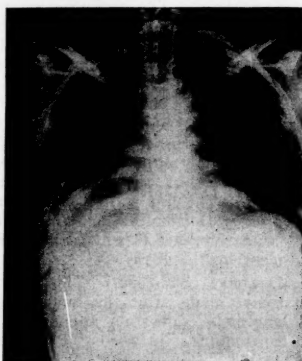


FIGURE 1. Plate taken lying down, showing opacity in lower right chest.

colon infection and it looked as if she had had a subphrenic abscess at that time which had

*From the Clinic of the Boston City Hospital.

burst up through the diaphragm and into the lung and was draining in that way. The first x-ray was essentially negative. A later one

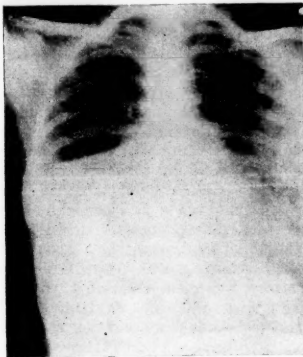


FIGURE 2. Plate taken in sitting position with apparent fluid level.

(Figure 1) showed density in the lower right chest, and I was asked to see her on account of the lung condition. At that time she had signs in the right lower chest suggesting lung abscess.

There was enough suspicion, however, from the history that empyema might also be present to make it advisable to take a plate with the patient in the sitting position. This showed (Figure 2) what was interpreted as a definite fluid level, so we explored behind, expecting to find an empyema or at least fluid in the chest; but, there was none—simply light adhesions. There were no definite signs of lung abscess. A couple of days later I percussed around in front, and it seemed that the liver dullness was too high. We tapped there and got pus. Soon after that I operated, taking out a piece of the sixth rib in front. Finding the diaphragm adherent, I made an incision through that and found an abscess about as large as a hen's egg, which was drained. She made a good recovery.

The only troublesome complication has been an intermittent fecal fistula, which I think comes from the stump of the gangrenous appendix, which sloughed off. It is a question whether or not that will continue to break open and close again. If so, it may be advisable to follow up the sinus and get the stump of the appendix, and so close the fistula. (The patient, during the next two weeks, had no further fecal discharge, and was discharged February 8th, with a small sinus, to the Out-Patient Department.)

OSTEOGENIC SARCOMA OF LEFT FEMUR*

DR. D. D. SCANNELL: This boy, who is sixteen years old, came in here on November 5th. He was the most courageous, uncomplaining boy I have ever seen. He came in with the story that six weeks before he had injured his left knee playing football. Before that he had been well. The injured knee was twice the normal size with no pain. The diagnosis of rapidly growing osteogenic sarcoma seemed obvious. Following our custom we had Doctor Mallory in consultation; he agreed, suggesting that at the time of operation we take out a section for immediate diagnosis before proceeding with amputation. On November 11th, a week after he came in, the lesion having been checked up by Doctor Butler, high amputation was done. The boy was discharged in two weeks, after a normal convalescence. The case will be of more interest if spoken of by Doctors Mallory and Butler, especially with reference to what can be held out in treatment by the X-ray.

DR. MALLORY: (S26-2585.) This photograph of the tumor made after the femur had been sawed lengthwise shows its appearance better than I can picture it in words. The tumor evidently started within the shaft from endosteum and grew expansively, invading and destroying the shaft and extending into the surrounding soft tissue on one side where the growth was evident to sight and touch before operation. The

dark color is due to congestion and especially to hemorrhage which was most marked outside of the bone. As you can see the tumor has extended a certain distance up through the marrow.

Microscopically the neoplasm is growing very rapidly. Mitotic figures are numerous, some are large and occasionally multiple so that they give rise to tumor giant cells. A few foreign body giant cells are present where lime salts are being dissolved. The cells in general are spindle shaped. In a few places they have produced a homogeneous intercellular substance which is often arranged in narrow trabeculae. The diagnosis is osteogenic sarcoma of the type sometimes called osteoid sarcoma.

The osteogenic sarcoma is recognized as a particularly malignant type of tumor. Few patients survive in spite of amputation owing to the formation of metastases through the blood stream.

Dr. Walker showed here a case of somewhat similar type a few weeks ago, a recurrence in the axillary region five years after the removal of an upper extremity for an osteogenic sarcoma of the humerus. The tumor was differentiating as a chondrosarcoma and this particular type is recognized as somewhat less fatal than the one you have just seen in which the prognosis is extremely bad.

Some of the tumors of bone for which they

*F cm the Clinic of the Boston City Hospital.

used to amputate are now recognized as simply marked examples of inflammation and repair in bone, complicated by great numbers of foreign body giant cells formed by fusion of en-



FIGURE 1. Section through the osteogenic sarcoma of the lower end of the femur showing extension through the shaft into the surrounding soft tissues and marked hemorrhage.

dothelial leucocytes attracted into the tissue by calcium salts and fatty acid crystals. These lesions are now treated by simple incision or curettage, or with X-rays; anything that will relieve the pressure within the bone.

DR. P. F. BUTLER: The interesting feature about this case is the rapidity with which events developed. The case dates back about four months. Six weeks after a slight injury the boy showed a tremendous swelling of the lower thigh. X-ray examination revealed a destructive process in the lower end of the femur and an irregular, radiating deposit of new bone extending out into the soft tissues. This is a char-

acteristic picture of osteogenic sarcoma. Its origin was probably in the endosteum rather than in the periosteum, because the periosteal type usually shows greater new bone formation and less destruction of the involved bone. The endosteal type is more malignant.

As is our custom, an X-ray was made of his chest the day previous to his operation to determine the presence of metastases. No metastases having been found, the leg was amputated. Two months later an X-ray study of the chest revealed about ten metastases in the lungs, as seen in this film.

The subsequent course of developments in this case will be about as follows:—He will report monthly to the X-ray department, at which time films will be made of the chest to determine the presence of metastases. Whether or not metastases are found he will receive heavy X-ray treatment of the chest every month. Metastases will undoubtedly recur. These metastases will disappear under heavy X-ray treatment for a number of months, probably six or eight. Eventually the metastases will develop too rapidly for us to handle them by means of X-ray treatments. By that time he will begin to show the depleting effects of systemic involvement. The usual length of life with treatment is about one year.

In our series of similar cases the longest duration of life has been one year and four months after the operation. In this case rapid recurrences of metastases in the lungs were cleared up month after month for nearly eight months, but eventually the patient went into intractable decline.

Intestinal Stenosis with Diarrhea.—Case presented and discussed by Dr. E. N. Libby.

Chronic Empyema Following Traumatism.—Case presented and discussed by Dr. H. Binney.

Operative Treatment of Fracture of Os Calcis. Case of Splenic Anemia.—Cases presented and discussed by Dr. A. R. Kimpton.

Internal Strangulated Hernia.—Case presented and discussed by Dr. J. J. Hepburn.

THE ADDRESS DELIVERED BEFORE THE MASSACHUSETTS TUBERCULOSIS LEAGUE AT THE ANNUAL MEETING, APRIL 26, 1927, BY THE PRESIDENT, KENDALL EMERSON, M.D., F.A.C.S.

It is my very great pleasure to welcome you on behalf of the Massachusetts Tuberculosis League to its thirteenth Annual Meeting. Our history, though still brief, is not without honor and considerable achievement. And in a review of this baker's dozen years of work the one just completed compares not unfavorably with those that have gone before. The reports that come to you from time to time outlining the current activities of the League are sufficient to call your attention to the veritable mountain of work

heaped up by the Executive Secretary, the Educational Secretary and the devoted personnel of the Office. I call it my automatic staff for in no organization with which I have been connected have I found such well coordinated energy directed spontaneously along lines of right action. It appears to run, like the popular engines of today, on internal combustion.

To be sure the Executive Committee has held its regular bi-monthly meetings throughout the year and has supervised and directed policies

as a good Executive Committee should. But to the energy and initiative of the staff belongs the credit for the enlargement of the League's activities and for its work well done.

During the year Dr. Parker M. Cort and Mr. Walter F. Greenman have both resigned from the Board, in each case because of removal of residence into neighboring States. It is with regret that we were obliged to accept their resignations and the gratitude of the League follows them into their new duties. Both served long and faithfully the interests of our society and both are men of keen vision in furthering the anti-tuberculosis fight.

Their places were not easy to fill but your Committee feels that we should congratulate ourselves on the fact that Dr. Henry D. Chadwick and Dr. Adam S. MacKnight were found willing to serve and have been giving us their valuable counsel during the past few months.

Mr. Kiernan's and Miss Johnson's reports will follow and I shall not infringe on your time by referring to the details of the work that has been carried on during the last twelvemonth in furthering the program of affiliated societies and in developing our educational work.

It is a recognition of the ability of your Executive Secretary that he has been elected President of the New England Tuberculosis Conference of Executive Secretaries, which organization put on the very successful Institute held in Boston last February.

We have endeavored to keep closely in touch with other organizations doing health work in the State. The League has been requested by the Massachusetts Medical Society to furnish it with suggestions regarding public education in health matters. We have also been in close co-operation throughout the year with the Massachusetts Central Health Council and with the State Association of Boards of Health. Our relations with the Health Department have continued to grow more intimate, we believe to our mutual advantage.

It has long been a well defined policy of the National Association that its work to be successful must supplement that of the Public Health Service. This means an interlocking program arranged on a basis of mutual confidence and understanding. In no other way can overlapping be avoided and all available resources be brought to bear most effectively to further a State Health Campaign. Occasionally in the past our League has inaugurated activities later taken over by the Health Department. At other times we have been called upon by the Department to furnish certain service for which it was inadequately equipped. This we have considered both a compliment to our organization and a duty to be fulfilled in generous measure. Such a policy your Executive Committee proposes to continue and recently an opportunity for such service has arisen. In connection with the Ten

Year Program we have been asked to coöperate by supplying a clinical nurse for part of this year. We have engaged Miss Ethel L. Dill, R.N., for the work and she is already on active duty with the Health Department. I wish our resources might enable us to keep her permanently.

In this connection it is not unfitting to refer to the helpful association on our Board of the Director of the Department of Public Health. His interest in our League is in keeping with his devotion to all branches of health work throughout the State and his advice and counsel has been given with a sympathetic courtesy deeply appreciated by all the members of the Executive Committee.

The National Association has recently offered its State Organizations the benefit of an apprenticeship service whereby a worker from headquarters in New York visits a State Society for several weeks to study local conditions in the light of the parent association's experience, make brief surveys and sum up his observations with recommendations in a final report. Mr. James G. Stone was in Massachusetts for six weeks last spring engaged in this service and his study proved to be both timely and suggestive.

Your President has received the appointment as representative from Massachusetts on the Board of Directors of the National Tuberculosis Association and attended the fall meeting of the Board at Memphis last January and a meeting of the Committee to consider affiliation with the National Heart Association in New York on the first of April. He will also be at the annual meeting in Indianapolis next month.

There have been no notable changes of policy during the past year. Summer camps continue to figure prominently among the activities of the various branches of the organization. In my report last year I called attention to the fact that this work might well be taken over gradually by municipalities releasing the energy of the local associations for other forms of educational and preventive work. The camp work, however, appears to be increasingly entrenched in the hearts of our affiliated societies. This is logical in view of the fine opportunity for intensive work among limited groups and also for the important advertising and publicity value of the summer camp. There is no type of work in which popular interest is so easily elicited, but we must not forget our other educational opportunities and duties.

Among these I shall mention two only, the Health Crusade and industrial preventive work. The Health Crusade needs increased resources and a larger personnel. Your Educational Secretary is doing two men's work herself and among some of the branches she is securing splendid coöperation. There is chance for larger growth, however, and I want to stress

particularly the opportunity not only for the spread of the Crusade among the primary schools but for a vast amount of much needed work among High Schools. This field has been touched for the first time this year in the experiment at Randolph of which Miss Johnson will doubtless speak.

The rapid growth of industrial medicine offers another opportunity for preventive work in tuberculosis. Many large shops have well organized health departments both for clinical and preventive work. With these we can cooperate more closely in the matter of literature and books. But in the smaller concerns our branches have a striking chance for service where no systematic health work is carried out. A study is being made in some localities and I commend this undertaking to all the branches. Most of our affiliated societies are located in industrial communities. The workingman is by no means unaware of the value of preventive medicine and the employer is not slow to recognize its value on both humanitarian and economic grounds.

It is gratifying to be able to announce that the Seal Sale has gone over the top, amounting to \$233,000—about \$3,000 more than last year. Ten percent of the revenue is received by the League for its maintenance. One third of this income goes directly back to the affiliated organizations in the form of educational service. The other two thirds is spent equally on your behalf, in the necessary mechanics of running the Seal Sale, in the work of the Executive Secretary who is in constant touch with the local Secretaries and whose faithful supervision is essential to the harmonious working of the va-

rious programs throughout the State. On the League devolves the task of representing the various affiliated organizations in their relations with other State health activities. We have taken an active interest in supporting the good and opposing the bad health legislation which comes up for consideration from time to time on Beacon Hill. We have been active in furthering more careful training in the diagnosis of tuberculosis among graduating medical students. We must engineer conferences on Health Camps and educational conferences among the local workers. These are but a few of the activities of the League Office.

Now it is self-evident that such work requires financial resources. It is not inappropriate again to point out that the cut of two years ago has resulted in genuine hardship to the workers in the League. It has meant overtime work and self-sacrifice such as is none too often found in similar offices. While the work has still been carried on satisfactorily under these difficult conditions our growth has been definitely handicapped and certain desirable new projects could not be undertaken. The League exists solely for your benefit and will continue as your servant to the fullest extent of its capacity. But in closing I will leave it to your careful consideration during the coming year whether you yourselves may not be the gainers by pooling a bit more of your individual incomes in order to add a traveling Secretary to the League's staff who may keep in closer touch with the affiliated organizations and aid you with experienced advice and counsel in your educational and preventive program.

MEDICAL PROGRESS

PROGRESS IN HEMATOLOGY 1925-1926

BY HYMAN MORRISON, M.D., AND BERNARD I. GOLDBERG, M.D.

SINCE the last report in hematology, progress in this field has not been marked by any outstanding discoveries. It has rather proceeded in a logical sequential method. Interesting and valuable facts have been brought to light,—the most striking being the application of dietetic therapy in pernicious anemia.

EXPERIMENTAL

Morphology: The technique of supravital staining has afforded a means of blood studies closer to the native state of the cells. Sabin and her co-workers have continued their fundamental studies on the elements of the blood. They¹ have shown that the total number of white cells changes during the day. The total number of white blood cells is increased in the afternoon regardless of whether food has been taken or not, and this entire increase is the result of an increase in the number of the neutrophilic leucocytes. The neutrophilic leucocytes die out in

showers, often of considerable proportions; these dead cells are promptly replaced. Sabin and Doan² have shown that desquamated endothelium is a practically constant constituent of normal blood. This type of cell is not identical with the monocyte and there is an increase in its number under many pathological conditions. The nature of the breaking down of the red cells in the circulation was demonstrated by them³ to be a process of fragmentation, which is constantly occurring to some degree. These fragments as well as whole red cells, are then phagocytized. The phagocytes increase proportionately when there is an increase in fragmentation in abnormal or pathological states. Foote⁴ includes under the term of endothelial phagocytes, not only the free derivatives of vascular capillary endothelium, but also fixed and free cells of the reticulum, especially that lining vascular and lymph sinuses, and also some of the monocytes of the blood.

Blood Volume: Ashby⁵ presents further studies on whole blood volume described in the earlier literature. The dye method for determining the blood volume in man has been revived and defended by Lindhard⁶ who found the total blood volume in eleven subjects to be 4.9% of the body weight as an average. An interesting feature noted was the ability of eliminating the dye from the circulation after the subject had received repeated injections. Smith⁷ studied the behavior of brilliant vital red when introduced into the blood stream, finding elimination to be by the hepatic and not by the renal route. He found that dye passed in considerable amounts into the lymph and that therefore the blood volume figure included part of the lymph and tissue fluid also. This phenomenon explains in part the fact that the dye method gives figures which are larger than the carbon monoxide method.

Drinker et al.⁸ have determined the volume of blood in the heart and lungs of cats, by means of ingenious experimental methods. A heart-lung preparation is utilized in which the lungs are enclosed in the chest and artificially respired. They find that alteration in blood carbon dioxide and oxygen have no significance on pulmonary blood volume if cardiac inflow remains constant and if no failure of the left ventricle occurs. Increase in inflow into the right ventricle is the only means falling within ordinary normal experience which results in increase of the pulmonary blood volume. When the left branch of the pulmonary artery is occluded the right lung gives free passage to the pulmonary blood even when cardiac inflow is greatly increased. These and other findings may eventually yield data of value regarding blood and blood flow changes in pulmonary embolism.

Resistance of Red Cells: The diagnostic value of the red cell fragility test in such conditions as the hemolytic states has been definitely established. Leake and Pratt⁹ have determined quantitatively the resistance of erythrocytes to hypotonic solutions and find extremely wide variations existing for normal subjects. The red blood cells of women on the average seem normally to be slightly more resistant to hypotonic saline solutions than those of men. Leake and Guy¹⁰ observed a rise in the number of circulating erythrocytes following the administration of red bone marrow and spleen to dogs. The increase in the number of reticulocytes was inadequate to explain this. Studying the resistance of the red blood cells to hypotonic salt solutions, they found a striking increase in the osmotic resistance of erythrocytes to hypotonic saline solutions in these dogs.

Rockwood and Mason¹¹ studied the physico-chemical aspect of hemolysis. An interesting fact observed by Green¹² was that the fragility of normal cells in hypotonic saline solution is

greatly decreased by treating them with pernicious anemia serum even when diluted 1:1000. This indicates that there is present in such serum some agent which decreased fragility as part of a process of injury and eventual hemolysis and that this may be the hemolytic agent responsible for the anemia. Oliver and Barnard¹³ studying the nature of the surface of the red blood cell state that a red cell when suspended in a fluid reacts in regard to its electrokinetic properties as if it possessed a surface of globulin.

Fibrin and Fibrinogen: Blood fibrin and fibrinogen have attracted some attention. Foster and Whipple¹⁴ describe a method of determination devised by them and Schultz, Nicholas and Shaefer¹⁵ have introduced certain modifications. According to the former investigators the liver is the chief, if not the sole, source of fibrinogen and find that those diseases which stimulate or depress the liver function in like manner and in equal degree stimulate or depress fibrinogen production. Blood fibrin in normal and deranged states was the subject of study by McLester, Davidson and Frazier¹⁶. They report values for blood fibrin in health as ranging from 250 mg. to 400 mg. per 100 c.c. of plasma with an average of about 330 mg. In the same person in health there is a marked constancy. Low figures prevail in typhoid fever and grave anemias, all other diseases give increased fibrin values.

Sedimentation Test: During the past few years a voluminous literature has sprung up on this test. Its proponents have been many; some writers have not been impressed. Fundamentally the test consists of determining the rate of sedimentation of the erythrocytes in terms of minutes or hours using citrated blood and following a standard technique. Cutler¹⁷, Morris¹⁸, Popper and Kreindler¹⁹ regard it as of value in studying pulmonary tuberculosis, being more useful in determining prognosis than diagnosis. Zeekwer and Goodell²⁰, Schmitz and Schmitz²¹, Noyes and Corvess²², Baer and Reis²³, and Neumann²⁴ have all utilized it in gynecologic cases with varying results, pelvic inflammation and neoplasms being the chief objects of study.

BIBLIOGRAPHY

EXPERIMENTAL

- 1 Sabin, F. R., et al.: Bull. Johns Hopkins Hosp., 37:14, 1925.
- 2 Sabin, F. R., and Doan, C. A.: Jour. of Exper. Med., 43:823, June 1, 1926.
- 3 Sabin, F. R., and Doan, C. A.: Jour. of Exper. Med., 43:839, June 1, 1926.
- 4 Foote, N. C.: Anat. Record, 30:15, 1925.
- 5 Ashby, W.: Arch. of Int. Med., 35:516, Apr. 15, 1925.
- 6 Lindhard, J.: Ann. Jour. of Physiol., 77:569, Aug. 1, 1926.
- 7 Smith, H. P.: Bull. Johns Hopkins Hosp., 36:325, 1925.
- 8 Drinker, C. K., Churchill, E. D., and Ferry, R. M.: Am. Jour. of Physiol., 77:590, Aug. 1, 1926.
- 9 Leake, C. D., and Pratt, H.: Jour. A. M. A., 85:899, Sept., 1925.
- 10 Leake, C. D., and Guy, E. F.: Jour. of Pharm. and Exper. Therap., 25:357, June, 1925.
- 11 Rockwood, R., and Mason, E. C.: Jour. of Lab. and Clin. Med., 10:917, July, 1925.
- 12 Green, R. C.: Proc. Soc. Exp. Biol. and Med., 22:305, 1925.

- 13 Oliver, J., and Barnard, L.: *Am. Jour. of Physiol.*, 73:401, July, 1925.
- 14 Foster and Whipple: *Am. Jour. of Physiol.*, 58:365, Jan., 1922.
- 15 Schultz, E. W., Nicholas, J. K., Shaefer, J. H.: *Am. Jour. of Path.*, 1:101, 1925.
- 16 McLester, J. S., Davison, M. T., and Frazier, B.: *Arch. of Int. Med.*, 35:177, Feb., 1925.
- 17 Cutler, J.: *Am. Jour. of Med. Sc.*, 171:882, June, 1926.
- 18 Morris, W. H.: *Am. Rev. of Tuberc.*, 25:431, 1924.
- 19 Popper and Kreindler: *Annals de Medecine*, 17:57, Jan., 1925.
- 20 Zeckwer, I. T., and Goodell, H.: *Am. Jour. of Med. Sc.*, 169: 209, Feb., 1925.
- 21 Schmitz and Schmitz: *Am. Jour. of Obst. and Gyn.*, 11:353, 1926.
- 22 Noyes, I. H., and Corvase, A.: *Boston Med. and Surg. Jour.*, 195:891, Nov. 4, 1926.
- 23 Baer, J. L., and Reis, R. A.: *Surg., Gyn. and Obst.*, 60:691, May, 1925.
- 24 Neumann, H. O.: *Zentralblatt f. Gynak.*, 49:354, Feb. 14, 1925.

SECONDARY ANEMIA

The chief interest in secondary anemia is the experimental work relating to the blood regeneration under various circumstances. Some of the data to follow are more or less applicable to pernicious anemia. In a series of communications Whipple and Robscheit-Robbins^{1,2,3,4} report their results with experimental anemia. A severe secondary anemia is produced in dogs and this anemia level is maintained as near a constant as possible by suitable bleedings. By this means it is believed that the stimulus to hemoglobin production will be a sustained maximum and the maintenance replacement factor for hemoglobin and red blood corpuscles as nearly a constant as possible. Two standard basal rations are described which furnish complete food requirements for the adult dog even under severe anemia conditions and yet permit of minimal hemoglobin and red cell regeneration over and above the unknown maintenance factor. The efficiency of other diet factors and drugs can then be tested by alternating with control bread periods. They found that beef liver feeding in severe anemia is associated with a maximal regeneration of hemoglobin and red cells. Beef heart feeding is distinctly less favorable when compared with liver feeding, and beef muscle still less favorable. This is in contrast to their earlier anemia experiments which allotted to beef muscle a higher value; however, the previous anemia experiments were of short duration, compared to the prolonged anemia under subsequent observation. A further revision of opinion applies to the value of iron, which exerts a favorable action in the long standing severe anemia. On the other hand, arsenic and germanium dioxide were essentially inert. Green vegetables are only moderately favorable food factors for the regeneration of hemoglobin and red cells. The various types of green vegetables do not differ greatly in effectiveness. It must be kept in mind that these findings were based on anemia produced in dogs under experimental conditions, but from the nature of the experiment and from independent clinical observations of others it seems that humans will react similarly. Bailey, Davidson and Bunting⁵ did

not find germanium dioxide to be a hematopoietic stimulus in the rabbit; on the contrary the drug in fairly small doses was toxic for the main parenchymatous organs. Williamson and Ets⁶ state that inorganic iron, whether given by mouth or subcutaneously is absorbed and may be found especially in the liver and spleen, but is not converted into hemoglobin whereas the conversion of food iron is very pronounced. Their experiments were similar to the short ones of Whipple who was forced to reverse his opinion by his later experiments. Bass and Denzes⁷ believe in the value of inorganic iron in certain anemias of infancy as an adjunct to diet and regard the dosage generally prescribed as too small. Jones⁸ prefers transfusion in the treatment of secondary anemia attributing to iron and arsenic practically no beneficial effect. Hart, Steenbock et al⁹ present data which support the original hypothesis of Abderhalden that hemoglobin can be built from inorganic iron in the diet only when that diet is accompanied by certain organic structures and further that milk is not only low in iron but it is also low in the organic complexes that make possible the building up of hemoglobin.

Pleiochromic Anemia: In a paper entitled "An Acute Febrile Pleiochromic Anemia with Hyaline Thrombosis of the Terminal Arterioles and Capillaries" Moschowitz¹⁰ describes a case with these unique manifestations the parallel of which he has failed to find in a search of the literature. Brill¹¹ reports a similar case, the essential features of which appear to be: a more or less acute onset, a rapidly developing anemia resembling the pernicious variety but retaining the characteristics of a secondary anemia with respect to the appearance of the blood corpuscles, and irregular pyrexia the temperature usually ranging between 100 and 102 F. Like Moschowitz he found the characteristic pathologic lesion is a plugging of the terminal arterioles or capillaries with hyaline thrombi. He succeeded in effecting a cure in one case through blood transfusions given in small amounts at frequent intervals. Lederer¹² reports three cases of an acute hemolytic anemia probably of infectious origin which bear certain resemblances to this condition. Prompt and permanent recovery followed a single transfusion of unmodified blood.

Sickle-cell Anemia: The finding of peculiar sickle cells in the peripheral blood in a certain type of hereditary anemia has resulted in a number of case reports by Browne¹³, Marie¹⁴, Cooley and Lee¹⁵ and Anderson¹⁶. Although almost exclusively confined to the negro race Castana¹⁷ claims to have observed a case in a white child.

Regarding the other types of anemia such as the anemia of Von Jaksch, Banti's disease, etc., the literature is chiefly occupied by case reports and will not be reviewed.

BIBLIOGRAPHY

SECONDARY ANEMIA

- 1 Whipple, G. H., and Robacett-Robbins, F. S.: *Am. Jour. of Physiol.*, 72:395, Apr., 1925.
- 2 *Ibid.*: P. 405.
- 3 *Ibid.*: P. 419.
- 4 *Ibid.*: P. 431.
- 5 Bailey, G. H., Davidson, P. B., and Bunting, C. H.: *Jour. A. M. A.*, 84:1722, June 6, 1925.
- 6 Williamson, C. S., and Eiss, H. M.: *Arch. of Int. Med.*, 36:323, Sept., 1925.
- 7 Bass, M. H., and Denzer, B. S.: *Jour. A. M. A.*, 86:938, Mar. 27, 1926.
- 8 Jones, M. L.: *Am. Jour. of Med. Sc.*, 169:563, Apr., 1925.
- 9 Hart, E. B., Steenbock, H., Evehjem, C. A., and Waddell, J.: *Jour. of Biol. Chem.*, 65:47, 1925.
- 10 Moschowitz, E.: *Arch. of Int. Med.*, 36:89, July, 1925.
- 11 Brill, I. C.: *Arch. of Int. Med.*, 37:244, Feb., 1926.
- 12 Lederer, M.: *Am. Jour. of Med. Sc.*, 170:500, Oct., 1925.
- 13 Browne, E. Z.: *Med. Clin. of N. Am.*, p. 1191, Jan., 1926.
- 14 Marie, P. L.: *Presse Medicale*, 33:673, May 23, 1925.
- 15 Cooley, T. B., and Lee, F.: *Am. Jour. of Dis. of Child.*, 32:334, Sept., 1926.
- 16 Anderson, H. B.: *Am. Jour. of Med. Sc.*, 171:641, May, 1926.
- 17 Castana, V.: *Pediatra (Naples)*, 33:431, Apr. 15, 1925.

PERNICIOUS ANEMIA

Etiology: Hereditary factors are again stressed by many. A large number of familial cases were reported prior to the scope of this review. Meulengracht¹, Dorst², Hurst³, Faber⁴, and Emile-Weil⁵ report further cases of such incidence with discussion of the various theoretical implications. The theory most prevalent regarding the pathogenesis of pernicious anemia is that of an intoxication due to toxin absorption from the upper gastro-intestinal tract. Its warmest adherents are Faber⁶, Hurst⁷, Weinberg⁸, Gram⁹, Ivy¹⁰, Lepehne¹¹, Dixon, Burns, and Giffen¹². The characteristic effects of pernicious anemia are explained by these authors as the result of a hemolytic, myelotoxic, and neurotoxic action. Hurst³, Biegler¹³ and Reese Skoog¹⁴, and Grinker¹⁵ review the spinal cord changes and note its early appearance in many cases.

The interest excited by the attention focussed on the gastro-intestinal tract has led to careful bacteriological studies of the fecal flora. Moench, Kahn and Torrey¹⁶, Cornell¹⁷, McLeod and Wheatley¹⁸, all present evidence that abnormal bacteria such as *B. Welchii*, *B. Coli* and streptococcus exist in the upper gastro-intestinal tract and liberate toxins. Wood¹⁹ claims to have extracted an hemolysin from Manila Psilosis and Seyderhelm²⁰ from the *Dibothriocephalus*. The similarity in hematologic and clinical picture between sprue and pernicious anemia is stressed by Elders²¹ and Wood²². Koessler, Mayer Loughlin²³, attribute great importance to Vitamine A.

Peabody and Broun²⁴, and Whitby and Jackson²⁵ made observations on phagocytosis of erythrocytes in the bone marrow in pernicious anemia. With this Peabody and Broun²⁶ also studied the attendant rise in blood pigments. St. George and Brown²⁷, and Fishberg²⁸ utilize this variation in pigment content which is expressed quantitatively as the icterus index, to differentiate between primary and secondary anemia. The rather constant macrocytosis in pernicious

anemia has resulted in studies of red cell diameters by Grosh and Stifel²⁹ and Lowy³⁰, with descriptions of technique.

With the increasing use of radioactive substances, data are gradually being accumulated concerning its remote as well as its immediate effects, among which may be included the effects on the hematopoietic system. Hoffman³¹, and Martland, Conlon and Knef³² point out the deleterious results of radioactive substances, the effects prolonged long after the removal of the cause. Pernicious anemia in some cases of the aplastic type following radiation administered in various forms are reported by Ross³³, Lankhout³⁴, and Reitter and Martland³⁵.

Treatment: Regarding the treatment of pernicious anemia we are on the threshold of some very important contributions which portend brilliant results and which may eventuate in a modification and clarification of our conception of the disease. To the Boston investigators, Minot and Murphy^{36, 37}, belongs the credit of evaluating for clinical use a dietary treatment. Several regimes, as these authors point out, have been suggested for many years, the rationale of the diets being as varied as the diets themselves. None, however, are accompanied by such painstaking blood studies and careful follow-up work as the contribution of Minot and Murphy.

The basis of the diet is chiefly the outgrowth of the experimental work of Whipple and his collaborators, described above. The special diet advocated by Minot and Murphy is one composed of foods rich in complete proteins, particularly liver (200 grams or more if possible) and an abundance of muscle meat (125 grams or more). To these are added about 400 grams of fruits and 300 grams of vegetables (1-10% carbohydrates). Fats are kept low, not over 70 grams allowed.

Their study is based on a group of forty-five cases. The condition of all forty-five patients became much better rather rapidly, soon after commencing the diet. In general the red count rose to normal or within the vicinity of normal counts, especially in those cases that were faithful in adhering to the diet. The rise in the red cell count was rapid, reaching high levels in one to six months, and clinical improvement was obvious usually within two weeks. Patients having had two or more relapses showed on the average slightly lower red blood corpuscle counts about one and two months after commencing the diet than did those who had started it in their first or second relapse. One of the earliest objective signs of improvement discernible before the end of the first week was the beginning of a definite rise of reticulocytes in the peripheral blood of usually from 1.0 per cent to 8.0 per cent and even to 15.5 per cent of all the red blood corpuscles. This agrees with the report of Dameshek³⁸, who noted in fifty cases of pernicious anemia the constancy of

reticulocyte rise as presaging a remission. The results of this dietetic treatment can hardly be accounted for by the coincidental accumulation of cases, all in an incipient stage of remission. It is also not customary for the red blood corpuscle counts during remissions of pernicious anemia to be so frequently of the height that occurred in these patients. Other beneficial results were the decrease of the icterus index of the blood serum resulting in a transition from the characteristic lemon tint to a more normal appearing color of the skin, and a regulation of bowel movements approaching more that of the normal. The paper of Koessler²³ strikes a similar keynote, emphasizing the importance of Vitamin A in the diet as mentioned above. The similarity in some of the diets used in the treatment of sprue probably explains the beneficial results reported. The use of hydrochloric acid is still fairly universal, though much larger doses are being recommended to supply the deficiency due to the achlorhydria both for digestive and bactericidal purposes. It was used by Minot and Murphy in most of their cases. Dorst² gives $\frac{1}{2}$ to 1 dram of diluted hydrochloric acid well diluted four times daily. Other advocating hydrochloric acid and claiming beneficial results are Bing²⁹, and Ivy¹⁰. Hurst⁴⁰ attempts the eradication of oral sepsis, administers doses of hydrochloric acid, gives a culture of *B. acidophilus* in the hope of substituting a non-pathogenic for a pathologic flora, and powdered animal charcoal. It is of interest to note that Haden⁴¹ found no positive evidence of a disturbance of chloride metabolism in pernicious anemia.

Burns and Dixon¹², tried ileostomy. Hartmann⁴² uses small doses of arsphenamine, McLaughlin⁴³ claims he has produced remissions with intravenous injections of mercurochrome, and Emile-Weil and Stiffel⁴⁴ transfused blood from a donor with plethora.

BIBLIOGRAPHY PERNICIOUS ANEMIA

- 1 Meulengracht, E.: *Am. Jour. of Med. Sc.*, 169:177, Feb., 1926.
- 2 Dorst, E. S.: *Am. Jour. of Med. Sc.*, 170:173, Aug., 1925.
- 3 Hurst, A. F.: *Brain*, 48:218, June, 1925.
- 4 Faber, K.: *Ann. of Clin. Med.*, 4:788, Mar., 1926.
- 5 Emile-Weil, P., and Lamy, M.: *Bull. de la Soc. Medicale des Hop.*, 49:473, Mar. 20, 1925.
- 6 See Ref. 4.
- 7 See Ref. 3.
- 8 Weinberg, F.: *Munchener medizinische Wochenschrift* (Munich), 72:166, Jan. 30, 1925.
- 9 Gram, H. C.: *Ugeskrift for Laeger* (Copenhagen), 87:79, Jan. 23, 1926.
- 10 Ivy, A. C.: *Northwest Med.* (Seattle), 25:399, Aug., 1926.
- 11 Lepehne, G.: *Medizinische Klinik* (Berlin), 21:206, Feb. 6, 1925.
- 12 Dixon, C. F., Burns, J. G., and Giffin, H. Z.: *Jour. A. M. A.*, 85:17, July 4, 1925.
- 13 Biegler, S. K., and Reese, H. H.: *Am. Jour. of Med. Sc.*, 171:194, Feb., 1925.
- 14 Skoog, A. L.: *Jour. A. M. A.*, 87:1957, Dec. 11, 1926.
- 15 Grinker, Arch. Int. Med., 38:292, Sept. 15, 1926.
- 16 Moench, L. M., Kahn, M. C., and Torrey, J. C.: *Jour. of Infect.*, 37, No. 2, 1925.
- 17 Cornell, B. S.: *Can. Med. Assn. Jour.*, 15:26, Jan., 1925.
- 18 McLeod, J. W., and Wheatley, B.: *Brit. Med. Jour.*, 1:325, Feb. 20, 1926.
- 19 Wood, E. J.: *Am. Jour. of Med. Sc.*, 169:28, Jan., 1925.
- 20 Seydewitz: *Deutsche medizinische Wochenschrift*, 58:27, June 20, 1924.
- 21 Elders, C.: *Lancet*, Jan. 10, 1925, p. 75.
- 22 See Ref. 19.
- 23 Koessler, K. K., Maurer, S., and Loughlin, R.: *Jour. A. M. A.*, 87:476, Aug. 14, 1926.
- 24 Peabody, F. W., and Broun, G. O.: *Am. Jour. of Path.*, 1:169, Mar., 1925.
- 25 Whitty, L. E. H., Jackson, R.: *The Lancet*, Jan. 30, 1926.
- 26 Broun, G. O., Ames, O., Warren, S., and Peabody, F. W.: *Jour. of Clin. Investig.*, 1:295, Feb., 1925.
- 27 St. George and Brown: *Arch. of Int. Med.*, 36:847, Dec. 15, 1925.
- 28 Fishberg, A. M.: *Am. Jour. of Med. Sc.*, 172:81, July, 1926.
- 29 Grosh and Stiffel: *Arch. of Int. Med.*, 36:874, Dec. 15, 1926.
- 30 Lowy, F. E.: *Klin. Wochenschr.*, 4:828, 1925.
- 31 Hoffman, F. L.: *Jour. A. M. A.*, 85:361, Sept. 26, 1925.
- 32 Martland, H. S., Conlon, P., and Knef, J. P.: *Jour. A. M. A.*, 85:1769, Dec. 5, 1925.
- 33 Ross, J. M.: *Lancet*, 1:367, Apr. 25, 1925.
- 34 Lankhout, J.: *Nederlandsch Tijdschrift v. Gen.* (Amsterdam), 2:2789, Dec. 19, 1925.
- 35 Reiter, G. S., and Martland, H. S.: *Am. Jour. of Roent.*, 16:161, Aug., 1926.
- 36 Minot, G. R., and Murphy, W. P.: *Jour. A. M. A.*, 87:470, Aug. 14, 1926.
- 37 Murphy, W. P., and Minot, G. R.: *Boston Med. and Surg. Jour.*, 195:410, Aug. 26, 1926.
- 38 Dameshek, W.: *Boston Med. and Surg. Jour.*, 194:659, Apr. 29, 1926.
- 39 Bing, H. J.: *Ugeskrift for Laeger* (Copenhagen), 88:475, May 20, 1926.
- 40 See Ref. 3.
- 41 Haden, R. L.: *Jour. of Lab. and Clin. Med.*, p. 557, Apr., 1925.
- 42 Hartmann, E.: *Deutsche medizinische Wochenschrift* (Berlin), 52:1038, June 15, 1926.
- 43 McLaughlin, P. B.: *Iowa State Med. Soc. Jour.*, 15:313, June, 1925.
- 44 Emile-Weil and Stiffel: *Bull. de la Soc. Medicale des Hop.* (Paris), 49:1454, Nov. 20, 1925.

HEMOPHILIA

Etiology: The etiology of hemophilia is still obscure. Howell and Cekada¹ supplementing their previous work have added to our knowledge materially. Minot and Lee as long ago as 1916 made certain observations which Howell has confirmed and carried further by a series of experiments. Each of the constituents of the blood known to contribute to the process of coagulation has been studied. Fibrinogen of hemophilic blood does not differ in either quantity or quality from that of normal blood, according to Howell and others. Thrombin added to hemophilic blood or to the fibrinogen prepared from it causes clotting in normal time. Antithrombin and heparin, both inhibitors of coagulation are not found to be increased. Prothrombin of hemophilic blood likewise differs neither in quantity nor quality from that of normal blood; the same applies to calcium. The remaining factor, the blood platelets, was then made the subject of investigation. By successive examination of smears, they were able to note the comparative changes that normal and hemophilic platelets exhibited. In the hemophilic blood the agglutination and disintegration of the platelets proceeded much more slowly than in normal blood under the same conditions, leading them to believe that this greater stability of the hemophilic platelets is the immediate cause of the prolongation of the clotting time. This increased resistance of hemophilic platelets results in a failure to supply the normal yield of the lipid material, a cephalin protein, ordinarily set free by the dissolution of platelets.

Pickering and Gladstone² suggest that the delay in clotting in hemophilia is due to the per-

sistence or reappearance in adult life of an embryonic condition of the plasma. They note that the hemophilic bloods examined coagulated in six to eight minutes at forty degrees and suggest that this property may possibly be utilized in controlling oozing from wounds and epistaxis. Feissly⁴, concludes from his experiments that the prolonged coagulation time in hemophilia is due to some anomaly in the formation of serozyne (thrombin) from proserozyne (prothrombin). He is inclined to attribute this to the presence of some stabilizing factor—perhaps Howell's heparin. He regards transfusion of citrated blood as the treatment for hemophilia. Davidson and McQuarrie⁵ studied the blood findings and heredity in three cases including one case of hemophilia of the eighth generation. No occurrence of the disease in females and no transmission through the males was observed. Their study of the blood confirms the theory of a qualitative platelets deficiency without a diminution in the number of platelets.

Treatment: The treatment of hemophilia has generally been conservative and empirical. Transfusion has been resorted to frequently. Mills⁶, has devised a method of treatment based on an earlier accidental discovery by Vines that the induction of a local protein reaction in the skin of a hemophiliac caused the bleeding to cease promptly and the clotting time to remain normal for several weeks. He has applied this treatment to five hemophiliacs with success watching their clotting time come down to normal as the local skin reaction developed. The method is merely to sensitize the patient to sheep or hen serum by a subcutaneous injection of about 4 c.c. and at the end of seven to ten days inject a few drops intradermally. If a single reaction does not bring the clotting time to normal it may be repeated at weekly intervals until this end is achieved.

BIBLIOGRAPHY

HEMOPHILIA

- 1 Howell and Cékoda: *Am. Jour. of Physiol.*, 78:500, Nov., 1926.
- 2 Pickering and Gladstone: *Lancet*, p. 602, Mar. 21, 1925.
- 3 Feissly, R.: *Jahrbuch für Kinderheilkunde* (Berlin), 119: 297, Nov., 1925.
- 4 Feissly, R.: *Klinische Wochenschrift*, 4:879, Apr. 30, 1925.
- 5 Davidson, E. C., and McQuarrie, I.: *Bull. Johns Hopkins Hosp.*, 39:343, 1925.
- 6 Mills, C. A., and Schiff, L.: *Am. Jour. of Med. Sc.*, 171:851, June, 1926.
- 7 Mills, C. A.: *Am. Jour. of Med. Sc.*, 172:71, July, 1926.

PURPURA HEMORRHAGICA

The reports of splenectomy in cases of purpura hemorrhagica (essential thrombopenia, or thrombocytopenic or thrombopenic purpura) confirm the earlier brilliant results. "The rationale of splenectomy consists in the fact that many of the cases of chronic purpura have a splenomegaly and that inasmuch as removal of the normal spleen results in an initial increase in blood platelets, the procedure seems logical in a disease characterized by a low platelet count."

This is a quotation from Whipple¹ who reports splenectomy in eighty-one collected cases, including three of his own, among which were seventy-three of the chronic type and eight of the acute, with six deaths in the chronic varieties and seven in the acute. His conclusion is that considering the brilliant immediate results and the restoring to normal living of the great majority of the cases of chronic purpura following splenectomy, it may be said that this operation has contributed the greatest advance to the therapy of the purpuras, but it must be remembered that these results are largely limited to the chronic variety. Furthermore, it should be emphasized that the patients after splenectomy should be cautioned and guarded against infections in order to obtain the best results.

Williamson² reports fifty-eight such cases with splenectomy of which fifty patients are well, two are improved and six are dead. He, too, states that the operation should be reserved for chronic cases which fall into two groups: (1) those in which chronicity with severity so interferes with the normal life of the subject that a state of chronic invalidism is established; (2) those in which the severity of the hemorrhages and the frequency of its occurrence constitute a real danger to the life of the patient. Vincent³ finds that the end results in the five cases that he has followed for a five year period show that the beneficial effect of splenectomy is not temporary. None of these cases had relapsed at the end of this period. The relief from abnormal external hemorrhage is complete in every case. When last observed, from four and one half to seven years after operation, all the patients in these five cases were reported to be physically fit and symptomatically well. Hoglund⁴, Reiling⁵, Beer⁶, and Mayo⁷ report similar results.

BIBLIOGRAPHY

PURPURA HEMORRHAGICA

- 1 Whipple, G. H.: *Surg., Gyn. and Obst. Jour.*, 42:329, 1926.
- 2 Williamson, B.: *Arch. of Dis. in Childhood* (London), 1:39, Feb., 1926.
- 3 Vincent, B.: *Boston Med. and Surg. Jour.*, 193, July 30, 1925.
- 4 Hoglund, G.: *Acta Medica Scandinavica* (Stockholm), 62: 255, Aug., 1925.
- 5 Reiling, W.: *Nederlandsch Tijdschrift v. Geneeskunde* (Amsterdam), 1:441, Jan. 30, 1926.
- 6 Beer, E.: *Ann. of Surg. (Philadelphia)*, 84:549, Oct., 1926.
- 7 Mayo, W. J.: *Am. Jour. of Med. Sc.*, 171:313, Mar., 1926.

POLYCYTHEMIA VERA

Therapy: A. Phenylhydrazine: The literature on polycythemia vera has not been extensive, neither were there any outstanding contributions. The earlier reports on the treatment of this disease with phenylhydrazine hydrochlorid are being confirmed by the reports of Brown and Giffen¹ and of Owen². In general phenylhydrazine hydrochlorid causes more constant reduction in the blood volume than either radiotherapy or venesection. The drug is given in doses of 0.10 Gm. three times a day; the total

amount given varies from 3.4 to 7.6 Gm., the average total being 5.7 Gm. It was estimated that each gram of phenylhydrazine brought about the destruction of an average of six gm. of hemoglobin. It has been found wise to discontinue the use of the drug when the erythrocytes drop to 4,500,000 and it is estimated that destruction of blood will continue for approximately one week longer. There is also evidence of reduction of blood pressure, frequently elevated in these cases. The questions involved in the occurrence of thrombosis during treatment and the ultimate toxicity of the drug, especially on the liver can only be decided by more extended experience and more prolonged observation.

B. Radiation: Patterson³ reports a case of essential polycythemia rubra treated successfully by exposing the long bones to Roentgen rays and suggests that the method may also be useful in treating certain cases of high blood pressure. Still Detre's⁴ patient, suffering from polycythemia, was treated by Roentgen irradiation of the spleen and bone marrow and returned two months after such treatment with blood changes corresponding to pernicious anemia and died shortly after.

Experimental Polycythemia: Of interest is the work of Binet and Williamson⁵ who produced asphyxia in chloralized dogs by way of mechanical obliteration of the trachea. On examination of the blood five minutes later the number of the red corpuscles was found to be increased by 1,000,000 or 1,500,000 per cubic millimeter. The polycythemia was manifest in all the animals. It developed gradually and persisted over an hour after normal respiration had been re-established. Of similar bearing on the production of polycythemia is the report of Barnes, Thompson and Lamb⁶ of a case of erythremia of intense degree without splenic enlargement due to a diffuse growth spread throughout the lung alveoli containing unstriated muscle tissue. The primary growth was a tumor of the rectogenital pouch which had been sarcomatous. This is said to be the first case of the sort on record.

Vascular Changes in Polycythemia: Brown and Giffen⁷ studied fourteen cases of this disease with relation to the vascular readjustments to the increased volume of the circulating blood. The total volume of blood was increased in all; the average was 166 c.c. for each kilogram of body weight. The viscosity of the blood was increased in all. The hematocrit values for the cells averaged sixty-two per cent. The capillaries of the nail fold showed venous engorgement in thirteen cases,—ninety-two per cent,—arterial in four. Engorgement of skin capillaries and retinal veins disappeared when the total volume of blood had diminished to 100-110 c.c. per kilogram. Cardiac enlargement and cardiac disease were noticeably absent. The liver was slightly enlarged in fifty-seven per cent; the

spleen enlarged in all. There was no increase of blood pressure and the renal function was but slightly impaired.

Changes in the Skin Capillaries: Brown and Sheard⁸ studied the skin capillaries in polycythemia vera and state they become distended, more markedly in their venous portion, and additional capillaries are formed. These changes have been studied quantitatively by photomicrographic methods, and have been compared to similar data obtained from normal subjects. The ratio of the total area of visible capillary blood to a unit area of skin is determined and found to be definitely increased. The demonstrable increase in the size and number of the capillaries exceed the changes in the blood. There is a gradual decrease in the size and number of capillaries with reduction of the cell volume.

BIBLIOGRAPHY POLYCYTHEMIA VERA

- 1 Brown and Giffen: Arch. of Int. Med., 38:321, Sept. 15, 1926.
- 2 Owen, T.: Jour. A. M. A., 85:2027, Dec. 26, 1925.
- 3 Patterson, S. W.: Lancet (London), 2:1115, Nov. 28, 1925.
- 4 Detre, L.: Med. Klinik (Berlin), 22:1297, Aug. 20, 1926.
- 5 Binet and Williamson: Comptes Rendus de la Soc. de Biologie (Paris), 95:149, June 25, 1926.
- 6 Barnes, S., Thompson, A. P., and Lamb, F. W. M.: Quart. Jour. of Med. (London), 19:151, Jan., 1926.
- 7 Brown and Giffen: Am. Jour. of Med. Sci.
- 8 Brown and Sheard: Jour. of Clin. Invest. (Baltimore), 2:422, June 20, 1925.

LEUKEMIA

Etiology: The neoplastic nature of leukemia is discussed by Webber¹ who regards the leukemic diseases as malignant neoplastic proliferations of various cellular elements of the blood-forming tissues. Piney² also concludes that the leukemias are neoplastic rather than infective. He lays stress on the tumor-like foci, and the likelihood that the process will be more rapid because of the tumor being composed of immature cells. The blood picture is regarded as due to (1) irritation of the bone marrow, (2) emigration of the tumor cells in progressively increasing numbers as the disease progresses and the amount of functional marrow lessens. The appearance of the marrow and blood show that the emigration of the immature cells cannot be attributed to depletion of tissue and consequent paucity of mature forms. Evans and Leucutia³ describe three cases of lymphosarcoma which in their terminal stages changed into lymphatic leukemia. These three are the only cases of lymphosarcoma in a group of sixteen patients treated by deep roentgen-ray therapy during the last four years, which had a fatal termination. In all three cases radiation therapy produced prolongation of life with entire disappearance of the manifest lesions treated, but later extension to the bone marrow occurred. At the time of the bone marrow involvement, all three patients had developed the picture of lymphatic leukemia. Evidence is thus brought that lymphosarcoma, if life is sufficiently prolonged, may change into lymphatic leukemia. This happens as soon as

the bone marrow involvement becomes the predominating feature of the disease.

Simonds⁴ studied three hundred and sixteen mice which showed enlargement of lymph glands and the spleen, and among these found sixty-seven instances of leukemia, twenty-eight of which were of the lymphatic, and thirty-nine of the myelogenous type; among the rest were found cases of pseudoleukemia, lymphosarcoma, and borderline or transition cases. Anatomically and histologically, leukemia, pseudoleukemia and lymphosarcoma in these mice have distinctive features which indicate that they are probably fundamentally of the same nature and probably belong among the true neoplasms.

E. Schereschewsky⁵ emphasizes the familial aspects of leukemia and reports that chronic lymphatic leukemia developed in a brother and sister now aged sixty-one and fifty-four.

Types of Leukemia: S. Goia⁶ describes the transformation of aleukemic into leukemic myelosis. His patient presented marked enlargement of the liver and spleen, with blood of the aleukemic myelosis type. Grave anemia with the characteristic blood findings of leukemia developed by the end of the year. The leukocyte count increased to 60,000; there was also a large number of young marrow-cells. Aleukemic myelosis may thus be easily mistaken for Banti's disease, an error which is fatal if splenectomy is performed. The clinical picture of an advanced internal cancer, with bone metastases, may be identical with that of aleukemic myelosis. Only careful roentgenography may avert the mistake. Aleukemic myelosis, not pseudoleukemia is the proper term for the disease. Wallstein and Bartlett⁷ report in clinical and anatomical detail a case of lymphatic leukemia in a female of fourteen months. They emphasize the aleukemic phase of acute lymphatic leukemia in infants and young children. Hemorrhage is an essential symptom of acute leukemia in infants, and the number of the platelets is low throughout the disease. Transfusions have only a temporary effect in raising the hemoglobin, the number of the erythrocytes, or the number of the leukocytes. Washburn⁸ reports two cases of lymphatic leukemia which showed leukopenia instead of leukocytosis. The interesting case of a patient with all the symptoms of pernicious anemia developing an additional hematologic syndrome of myelogenous leukemia three days before her death is cited by Jaksch-Wartenhorst⁹. Necropsy confirmed the former diagnosis. Carcinoma may also cause a transitory blood crisis resembling leukemia.

The type of leukemia in which eosinophiles were primarily affected was discussed in 1922 by McDonald and Shaw¹⁰ and again by Alexander¹¹ in 1924. Both cite cases of splenomegaly which after splenectomy developed a white count up to 138,250 per emm. in one case and 150,200 in

another with secondary anemia, with eosinophilia ranging from twenty-four to seventy-nine per cent. The conclusion by both groups of authors is that these are atypical cases of myelogenous leukemia. Bass¹² discusses a similar case in a child of six.

Leukemia and the Central Nervous System: Fried¹³ describes a case of leukemia involving the central nervous system and reviews thirty cases from the literature. In the author's case a patient with a subacute leukemic lymphadenosis died of apoplexy and at necropsy numerous lymphomas and hemorrhages were found in the brain. Grave degenerative changes were found in the interstitial, parenchymatous and mesenchymal elements of the brain, more pronounced in the vicinity of the extravasated blood and also around the lymphomas. These changes are not regarded as peculiar to leukemia, but are ascribed to circulatory disturbances in the brain due to hemorrhages and accumulated masses of lymphoid elements (similar lesions of a minor degree occur in primary and secondary malignancy of the brain.) In the thirty cases gathered from the literature, lesions of the nervous system have been reported in the hemispheres in twelve, in the cranial nerves in eight and in the cord in eleven cases, in eight of which spinal degeneration were observed in the absence of lymphomas, in many respects resembling those observed in pernicious anemia. Hemorrhages in leukemia are primarily due to vascular lesions produced by (1) stasis in the capillaries and "thrombosis" of the vessels by lymphoid cells, (2) by the invasion of the vessel walls by the lymphoid cells with dissociation of the vascular coat, and (3) by the hypothetic "toxin" which circulates in leukemic blood. The occurrence of lymphomas in organs or structures in which lymphoid tissue is normally absent (as in the brain) is due to the passage through the vascular wall by lymphoid cells, with the ultimate formation of large nodules which occasionally grow as autochthonous units. This phenomenon is defined as "colonization" by lymphoid elements and is to be distinguished from metastasis in malignancy.

Skin Manifestations: The skin manifestations associated with leukemia and allied conditions are discussed by Sir Humphrey Rolleston¹⁴. Cutaneous changes may be present in the entire group of leukemias and lymphomas as a result of treatment of the primary disease, and may assume therefore the form of pigmentation, keratosis, papilloma and herpes from administration of arsenic; erythema and purpura from benzol; pigmentation and burns from Roentgen rays or radium. As for the primary skin manifestations, he suggests that they may be due to auto-agglutination of white cells resulting in irritative and infiltrative processes, leading to perspiration, pigmentation, prurigo, pruritus, and

erythematous, desquamative, vesicular, bullous eruptions. Clement, Chauffard and Jonesco¹⁵ discuss hemorrhagic purpura in myelogenous leukemia and P. Emile Weil¹⁶ reports on fatal hemorrhagic conditions in leukemia.

Blood Platelets in Leukemia: G. R. Minot and T. E. Buckman¹⁷ summarize their conclusions on a study of the blood platelets in the leukemias as follows: "A study of the blood platelets yields useful knowledge for guiding treatment and appraising the state of health of a patient with leukemia. In chronic myelogenous leukemia the number of these elements may be normal, enormously increased, or greatly diminished, and in chronic lymphatic and acute leukemia it is the rule to find them below normal. Petechiae and other hemorrhages associated with decrease of blood platelets are common, and hemorrhages but not petechiae, may occur in chronic myelogenous leukemia when the platelets are much increased."

Therapy: Serinner and Mattick¹⁸ report the results of radium therapy in twenty-five cases of leukemia (sixteen lymphoid and nine myeloid.) Their conclusion is that radiation therapy tends to induce remissions with the least inconvenience to the patient. Medical treatment must be carried on at the same time. Strumia¹⁹ studied morphologic changes of the blood in myelogenous leukemia under radium treatment. Radium, especially if applied in small doses, acted first as a stimulant on both leukocytes and erythrocytes. In the second series the stimulating effect was chiefly noted on the megaloblasts. The next effect was one of destruction of the leucocytes, the order of their disappearance being in direct proportion to their immaturity. Platelets were greatly reduced, and the coagulation time proportionately lengthened. After the treatment there was a "free interval" during which the morphology remained about normal and the clinical signs quiescent. As the cells reappeared, the order was the reverse, the most immature forms coming last. Isaacs²⁰ studied the effects of Roentgen ray irradiation on the red blood cell production in cancer and leukemia and his evidence leads him to conclude that small doses stimulate to red cell division while large doses stimulate to maturity and death from senility. As a guide in the treatment of leukemia he found that when an increase in granule red corpuscles after irradiation is significant and sustained (two or more days) then there is definite clinical improvement. On the other hand cases in which there is no evident increase in the gran-

ule red corpuscles after irradiation, there is usually no clinical improvement.

Therapeutic Malaria: Bini²¹ reports the favorable influence of accidental malaria infection on leukemia. Luchernini²² describes a case of leukemia treated with inoculation of malaria. His patient was inoculated with three c.c. of blood infected with *Plasmodium vivax*. After twelve days of continuous remittent fever, he developed the first malarial attack. After twelve attacks the malaria was arrested with 1.5 Gm. of quinine daily, and a month later the leukocytes numbered 5,800, the erythrocytes 3,880,000, with hemoglobin fifty-two per cent. The leukocytes were nearly all of mature types. The spleen had been reduced to nearly half its former size, and its consistence was more normal, as was that of the various lymph glands that had been enlarged. Gamble²³ however, writes on the failure of this method of treatment in leukemia. Two patients, one with lymphatic and one with myelogenous leukemia were inoculated with *Plasmodium vivax* and allowed to have a series of febrile paroxysms. In each, there was a prompt fall in the leukocytes to less than half the previous number. Following the termination of the paroxysms with quinine, the white cells rose, in six and three days, respectively, to approximately their previous level.

BIBLIOGRAPHY LEUKEMIA

- 1 Webber, E. P.: Brit. Jour. of Child. Dis. (London), 23:185, July-Sept., 1926.
- 2 Piney, A.: Am. Jour. of Med. Sc., 69:691, May, 1925.
- 3 Evans and Leucutia: Am. Jour. of Roentgenol. and Therap. (New York), 15:497, June, 1925.
- 4 Simonds, J. P.: Jour. of Cancer Res. (Lancaster, Pa.), 9:329, Sept., 1925.
- 5 Schereschewsky, E.: Zentralblatt für Innere Medizin (Leipzig), 47:601, June 26, 1926.
- 6 Gola, S.: Arch. des Maladies du Cœur (Paris), 19:167, Mar., 1926.
- 7 Wallstein and Bartlett: Am. Jour. of Med. Sc., 169:830, June, 1925.
- 8 Washburn, A. H.: Am. Jour. of Dis. of Child., 29:621, 1925.
- 9 Wartenhorst, J.: Zentralblatt für Innere Medizin (Leipzig), 47:377, Apr. 17, 1926.
- 10 McDonald and Shaw: Brit. Med. Jour.
- 11 Alexander, M. E.: Jour. of Lab. and Clin. Med., 9:803, Sept., 1924.
- 12 Bass, M. H.: Am. Jour. of Med. Sc., 170:416, Sept., 1926.
- 13 Fried, B. M.: Arch. of Path. and Lab. Med., 2:23, July, 1926.
- 14 Rolleston, Sir Humphrey: Am. Jour. of Med. Sc., 169:298, Feb., 1925.
- 15 Chauffard, Clement and Jonesco: Bull. de la Soc. Med. des Hop. (Paris), 50:132, 1926.
- 16 Emile-Weil, P.: Bull. de la Soc. Med. des Hop. (Paris), 50:165, Feb. 5, 1926.
- 17 Minot, G. R., and Buckman, T. E.: Am. Jour. of Med. Sc., 169:445, Apr., 1925.
- 18 Serinner, B. F., and Mattick, W. L.: Jour. of Cancer Res., 8:504, Dec., 1924.
- 19 Strumia, M. M.: Jour. of Lab. and Clin. Med., 10:106, Nov., 1924.
- 20 Isaacs, Raphael: Am. Jour. of Med. Sc., 171:20, Jan., 1926.
- 21 Bini: Policlinico (Rome), 33:89, Jan., 1926.
- 22 Luchernini, T.: Policlinico (Rome), 32:1745, Dec. 14, 1925.
- 23 Gamble, C. J.: Jour. A. M. A., 88:87, Jan. 8, 1927.

**Case Records
of the
Massachusetts General Hospital**

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 13191

**A CASE OF HEMORRHAGE BACK OF
THE EYE IN A NEWBORN INFANT**

CHILDREN'S MEDICAL DEPARTMENT

A boy baby thirty-eight days old of Irish parentage was transferred from the Eye and Ear Infirmary February 3 for regulation of feeding. The complaint was failure to gain.

He was born on Christmas Day after a long, difficult labor at home. Forceps were finally applied. Several ecchymotic areas were noticed immediately. The head was very much misshapen. Within a few hours the right eye became red and swollen and began to bulge. December 27 the child was taken to the Eye and Ear infirmary, where the right eye was found to be greatly swollen and discolored and markedly bulging out of the socket. A large hematoma was present in the left sternomastoid. Necrosis of the cornea was well started. Bleeding and clotting time were found to be prolonged. The baby had been vomiting considerable coffee-ground material. 75 cubic centimeters of citrated blood was immediately transfused. He continued to vomit and do badly, so that subcutaneous saline was given. There was a rather bad reaction after it. The temperature was by this time septic. Nevertheless in view of the fairly good blood count and the normal bleeding and clotting time the eye was removed January 4. The temperature soon reached normal, but vomiting continued so that supplementary subcutaneous fluids had to be given every day or two. This resulted in retention of over a pound of fluid, with marked edema. January 11 transfusion of 75 cubic centimeters of citrated blood was again done. Twelve hours later the edema was gone. The condition slowly improved, although at admission to the Massachusetts General Hospital there was still occasional vomiting and regurgitation. About two weeks before the transfer a small abscess developed in the left abdominal wall. This was opened and drained. A week before transfer a large abscess developed in the right axilla. This was opened and drained much pus. No focus was ever located. Before drainage the temperature rose to 100.5°. Afterwards it was normal. The child was kept in the Infirmary for two

weeks longer because of possible exposure to chicken pox. He gained only a few ounces of weight in spite of twenty-eight ounces of breast milk a day.

Clinical examination showed a fairly well developed, poorly nourished infant. The examination was negative except for enlarged glands in the neck, axillae and groins. Several furuncles on the head, one on the buttocks and back. Small umbilical hernia. The tip of the spleen was felt. The genitals showed phimosis.

Urine examination was negative. Blood: 16,500 to 17,200 leucocytes, 58 per cent. polymorphs, hemoglobin 60 per cent., reds 3,380,000 to 3,980,000, moderate achromia. A throat culture was negative for Klebs-Loeffler bacilli.

Temperature 97.8° to 99.5° with one rise to 100° to 100.4° February 10 and 11. Pulse 130 to 150 to February 12, then 113 to 130. Respirations 29 to 48, after February 19 not above 33.

The baby was put on breast milk, with some feedings of a formula of whole boiled milk 18 ounces, karo an ounce and a half, water five ounces. February 5 the furuncles on the head, buttocks and back were incised. By February 12 they were healed. There was some discharge from the enucleated eye. The child took his feedings well and gained slowly, but continued to look rather pale and anemic. He was given cod liver oil. February 28 quartz light treatment was started. After this he gained very well on the same formula.

DISCUSSION

BY FRITZ B. TALBOT, M.D.

This is not a characteristic picture of hemorrhagic disease of the newborn. Usually the bleeding does not take place back of the eye. I do not remember any similar case in which this was a prominent feature of the physical findings.

It is often very difficult to determine at first whether a hematoma is due to the severe handling a baby has to undergo during labor or is due to hemorrhagic disease of the newborn. I remember one case very well in which there was a very large hematoma of the scalp of a baby who looked sicker than he should. As I watched him I saw swelling appear in the cheek. It assumed the appearance of a small nut, and was due to hemorrhage into the cheek. Immediately transfusion from the father changed the picture from that of an infant who looked as if he might die at any minute to that of a pink and lively and a perfectly healthy baby. It is about the most dramatic thing we can see in medicine.

Usually the bleeding is from the umbilicus, the intestine or the stomach, and shows in the vomitus. In about half the cases there is no change in the bleeding or clotting time.

The retention of fluids with edema is not an unusual finding in small babies, and it is very

difficult to treat in some cases. The procedure that was followed in this case is often successful. The transfusion does something to the body chemistry which changes the physiology so that the fluids go back to their proper places and are excreted in the proper way.

Breast milk is obtained in most instances from the Directory for Wet Nurses, which is a unique institution here in Boston and which is collecting and distributing about 400 ounces a day.

This is a case of hemorrhagic disease of the newborn followed by an infection of the skin with furunculosis. The failure to gain in weight was in all probability due to the furunculosis. He failed to gain despite the fact that he had the best food, human milk. When the furuncles were completely drained he commenced to gain.

One other thing that is of interest here is the use of the quartz lamp. This has been very valuable in these small babies for several reasons. In these babies it is used to prevent rickets during the winter months when the hours of sunlight are short. In the second place it is useful in healing up infections of the skin.

DR. CABOT: Has quartz light any other known therapeutic effect besides these you have mentioned?

DR. TALBOT: I might say that in rickets its action can be measured by its effect on the blood phosphorus. In rickets the blood phosphate is three millimeters per 100 cubic centimeters, and a few exposures to the ultra-violet ray causes it to rise often as high as six millimeters. It is also very useful in some cases of psoriasis. I have had some success with it in some cases of eczema, and I think it is useful in those of us who spend the winter in the north, who are working in the house and do not get out, and who catch cold easily. I think it does only what a day on a sunny beach will do.

DR. CABOT: Does a normal baby have palpable nodes along the junction of the ribs and the sternum, or does that mean rickets?

DR. TALBOT: It is not always but usually due to rickets. The newborn baby has palpable ones, and particularly the premature baby.

DR. CABOT: How soon should they disappear?

DR. TALBOT: Eliminating the premature infant I should think in the first month.

DR. CABOT: I saw a baby eight months old who had these nodes, and I told the mother that while I knew nothing about such things I thought they meant rickets. Shortly afterwards the baby's own doctor, a pediatrician, said they were not due to rickets.

Is the red count here essentially normal?

DR. TALBOT: The red count is low. The normal red count of a newborn baby is over five million. This baby has only 3,400,000 to 4,000,000. There is a correspondingly greater decrease in hemoglobin than there is in red cells,

and if this is accurate it means a secondary anemia due to infection.

LATER NOTES

Records of the Out-Patient Department show that at visits March 16 and 23 the baby was doing well. A diagnosis of rickets was made, and he was given a new formula on which he gained nearly four pounds in the next month. April 1 and 22 he was in excellent condition.

DIAGNOSIS

Hemorrhagic disease of the newborn.

CASE 13192

EXTENSIVE RENAL DAMAGE WITHOUT ADEQUATE SYMPTOMS

UROLOGICAL DEPARTMENT

An American factory operative of fifty-nine entered January 3 complaining of pain in the legs.

The March before admission he was told that he had whooping cough. This lasted about three months. He had a moderate amount of sputum and was in bed off and on. After that his legs began to pain, and his feet still more. They were much worse when he got cold. They became quite red when they hung down. There was no edema.

There is no family history of significance. The patient's general health was not very good, though he thought he had no more to complain of than most people. He had scarlet fever in childhood. He had occasional colds and sore throats. For a year he had had dyspnea on exertion. Six months before admission he had occasional stomach ache and attacks of abdominal pain which lasted about fifteen minutes. For six months he had urinated three or four times at night. Nine weeks before admission when he was going to work he lost the use of his right hand and his face became drawn over to the left side. He did not lose consciousness. He thought the hand was a little better. His memory was none too reliable. A week before admission a hernia on the right which he had had for seven years swelled and became tender.

Examination showed an extremely emaciated, dirty elderly man with definite weakness of the right facial muscles. He was a little stuporous, uncoöperative and unresponsive. Breath very foul smelling. Skin dry and scaly. Nasal septum deviated to the left. Marked pyorrhea and dental caries. Tongue tended to deviate to the left. Definite Harrison's groove. On deep inspiration there was slight lag of the right side of the chest; the costal angle hardly moved. Breath sounds rather indistinct but bronchovesicular. Slight friction rub in right anterior axillary line and also at the base of the heart to

the left of the sternum and down toward the apex. A few moist crepitant râles at the bases, but no free fluid. Spoken voice essentially normal. Apex impulse of the heart quite forceful in the fifth space, 10 centimeters from midsternum, 2 centimeters outside the midclavicular line, right border 4 centimeters, supracardiac dullness 5 centimeters. Action regular, rapid. Sounds of fair quality. Slight protodiastolic gallop. No murmurs. Abdomen slightly distended. A mass could be palpated bimanually in the right upper quadrant, smooth, rounded, tense, not tender, moving very little on deep inspiration, extending down to the level of the umbilicus and practically to the midline. The percussion note did not change between it and the liver. On the left side another mass could be felt both anteriorly and in the flank, apparently the left kidney. It was more fluctuant, not tender, and also extended about to the level of the umbilicus, but not so near the midline. It moved very little on deep inspiration. Abdominal reflex was diminished on the right side. Genital and rectal examination showed nothing significant. Tremor of both arms and hands. Weakness of flexor groups of muscles on the right side, but flexors and extensors of upper arms on both sides normal. Arm reflexes equal and active. Knee-jerks and ankle-jerks hyperactive. Ill sustained clonus of both ankles, more marked on the right. Much reddening and discoloration of legs when down.

Before the cystoscopy amount of urine 33 to 105 ounces, specific gravity 1.010 to 1.020, cloudy at one of four examinations, alkaline at two, a trace of albumin at three, rare to many leucocytes at all, two red cells per high power field at one. Blood: 9,500 to 15,300 leucocytes. Wassermann negative. Renal function: appearance time 9 minutes, total in two hours 40 per cent.

X-ray January 13 showed the kidney outline obscured by intestinal shadows. There was a large opaque area lying just to the left of the third lumbar vertebra which had the appearance of opaque material in the bowel; also several smaller shadows just peripheral to this, perhaps of no significance. The bones of the pelvis and the lumbar spine appeared somewhat atrophic. There appeared to be a little narrowing of the joint spaces between the first and third lumbar. Partial sacralization of the fifth lumbar.

A medical consultant thought that nothing could be done in the medical wards to make the patient a better operative risk.

January 5 the friction rubs had disappeared. The cardiac rate was slower. The non-protein nitrogen was 54. January 6 the temperature began to rise, reaching 103.8° the following day. The mass on the right was still the same. That on the left could not be definitely outlined, but there was a good deal of spasm and tenderness

and marked swelling on the left side. The non-protein nitrogen was 39 January 6 and 8. A medical consultant found the throat very red and injected but without membrane. The lungs were negative except that in the left scapular area there was a slight suggestion of change in breath and voice sounds; no râles. January 9 the abdomen was bloated, but the masses seemed about the same. The patient was not taking fluids so well and was given subpectorals. January 11 the temperature was returning to normal. It was still impossible to palpate the left side of the abdomen. January 14 the patient had slight nausea, though he felt better subjectively.

January 17 cystoscopy was done. A renal function test done January 20 showed the appearance time 15 minutes, total in two hours 13 per cent. The non-protein nitrogen was 88 January 19, 68 January 27. January 21 to 24 there was another period of elevated temperature, 99.8° to 102.5°. The patient showed so little vitality that it was thought he could never be operated upon.

January 27 a second cystoscopy was done. Ureteral catheters were left in for drainage, but the patient pulled them out in about forty-eight hours. January 31 a third cystoscopy was done.

February 2 operation was done. That afternoon the temperature, which had ranged from 98° to 100° for the past five days, rose to 104°. The pulse was rapid and feeble. The following evening the temperature rose to 104.9°. He was given digifolin and subpectorals of saline and glucose. Considerable urine was secreted. February 4 the condition became gradually worse. The temperature rose to 105.4°, the respiratory rate to 50. The pulse rose to 163, then suddenly dropped to 70. The mass in the left side of the abdomen decreased markedly. The one on the right remained unchanged. The lung signs indicated a diffuse bronchopneumonia, chiefly in the left chest and the posterior lobe. About midnight the patient died.

DISCUSSION

BY EDWARD L. YOUNG, JR., M.D.

Redness and pain without edema give a suggestion of obliterating endarteritis.

In the absence of other evidence of obstruction we cannot say anything more than incarceration of the hernia.

This is the picture of an old man, much older than his fifty-nine years, in very poor general condition, and one in which the examination does not point to any serious condition in the spot of original complaint. He comes in with pain in the legs, and says nothing about abdominal conditions. On cross-questioning there is the evidence of pain which he has had in the abdomen, frequency of urination, and on examination a mass which can be felt both on

the right and left in the upper part of the abdomen. On the left side the mass strongly suggests a kidney, that is, so far as the examination and the history tell us anything at all. Those masses have to be explained, and the suggestion of something in the kidneys means X-ray and cystoscopy.

This is the X-ray plate taken in the Out-Patient Department. The shadow is on the left side where the mass can be felt. There is no definite kidney outline, although the outline of the iliopsoas muscle can be seen. Consequently the shadow cannot be proved from this X-ray to be necessarily connected with the kidneys. It means more study with X-ray catheters in place, and a pyelogram.

The non-protein nitrogen is only a very little above normal. Fifteen per cent. total renal function is low.

The elevated temperature coming on after cystoscopy suggests that it is infection following cystoscopy.

I have no guess up to the present time, because we ought to keep open mind until we get the facts in the case so far as we can. The suggestion is of pus kidney on the left, and that the mass on the right was a large kidney trying to do double duty. That I think is as far as we are entitled to go.

DR. YOUNG'S PRELIMINARY DIAGNOSIS

Pyonephrosis, left.

Hypertrophy of the right kidney.

PRELIMINARY DIAGNOSIS JANUARY 17

Cystic kidney.

FIRST CYSTOSCOPY

The cystoscope entered with ease. The patient was very difficult to examine by cystoscope because of great straining. The bladder was drawn by this straining into numerous folds. Fortunately both orifices could be seen between the folds and were easily catheterized. Within a few inches of the pelvis on the left side the catheter met an obstruction. Both catheters were number 6 whistle tips and drained profusely. A left pyelogram was made. The patient returned to the ward with both ureteral catheters fastened into position.

PYELOGRAM JANUARY 17

A plate with the radiographic catheter in position confirmed the previous findings. The shadow previously described was present and in the same locality. After injection dense cloudy masses were seen throughout the left flank. A faint outline of what appeared to be an enormously enlarged kidney was visible. Stone in left kidney pelvis on the upper end of the ureter. Extreme dilatation and distortion of the ureter.

SPLIT RENAL FUNCTION JANUARY 17

Right ureter. Appearance time 12 minutes. A trace in 15 minutes. Left ureter no function. Sediment of urine from the right ureter showed 50 to 60 red blood cells and 8 to 10 leucocytes per high power field. Stained smear showed occasional bacilli. Sediment from the left ureter showed 20 to 30 red blood corpuscles and 15 to 20 leucocytes per high power field. Stained smear showed bacilli and cocci.

BACTERIOLOGICAL REPORT

Cultures of urine from both the right and the left ureters showed bacillus coli.

FURTHER DISCUSSION

In the X-ray plate on the right side the catheter goes to the kidney, yet the kidney outline does not show. On the left side the opaque material goes up apparently to this area. It is hard to be sure whether those vague shadows are portions of it or not.

In the second plate we see the X-ray catheter going up to that spot and stopping. Have you anything more to say about the X-rays, Dr. Dresser?

DR. RICHARD DRESSER: At the first examination we thought those dense areas might be fecal matter in the bowels. We have to be very careful to take in the bowel in examination for the kidney. We requested another examination. The catheter stopped at the opaque mass, and it was pretty definitely a stone. I rather think those other opaque shadows are stones. They seem to stay in the same position.

DR. YOUNG: Do you think that this is a little sodium iodide?

DR. DRESSER: I think that may be a little. I think those very dense shadows are probably stones.

DR. YOUNG: Of course the problem there is the problem whether or not we can take away the kidney or the stone and leave the man behind. They tried first to see if they could improve his condition by washing out the kidney.

DR. YOUNG'S PRELIMINARY DIAGNOSIS

Left calculous pyonephrosis.

Right pyelonephritis or pyonephrosis.

PRELIMINARY DIAGNOSIS JANUARY 27

Left ureteral calculus.

Hydronephrosis.

SECOND CYSTOSCOPY

The cystoscope entered easily. The bladder urine was foul. After repeated washings a number 11 catheter was introduced in the operative cystoscope. It passed easily up to the region of the pelvis, where it met with resistance, evidently a stone.

PRELIMINARY DIAGNOSIS JANUARY 31

Ureteral calculus and pyelonephrosis.

THIRD CYSTOSCOPY

The cystoscope entered easily but caused the patient a great deal of straining. Foul bladder urine drained out of the cystoscope. After repeated washings a glimpse was obtained of both ureteral orifices, which catheterized easily, the right ascending to the pelvis, the left meeting obstruction well up toward the pelvis if not in it. At this time a good view of the bladder was not obtained as it was imperative to perform ureteral catheterization speedily.

FURTHER DISCUSSION

There was an attempt to improve his condition by ureteral drainage.

They did operate. I suppose they tried to get better drainage by nephrostomy either with or without removal of the stones,—whatever they could do with least injury to him, in order to lessen the absorption from the left side. It seems to me a pretty hopeless proposition.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Left calculeous pyonephrosis.
Right pyonephrosis.

PRE-OPERATIVE DIAGNOSIS FEBRUARY 2

Hydronephrosis.

OPERATION

Skin infiltration with novocain over area of usual oblique lumbar incision. Incision carried through skin, fascia and muscle parallel to the lower border of the ribs. Upon cutting the lumbar fascia the perirenal fat appeared in the wound. The kidney was freed for a small distance from the surrounding fat. The organ was tense and fluctuant. A small incision was made through the kidney cortex and several ounces of pus evacuated. Several small stones were felt, and one large one. The former were removed, but the latter was impacted in the pelvis of the kidney and could not be removed without considerable difficulty. It was believed that the patient's condition did not warrant further efforts to dislodge it. A rubber tube was put into the kidney sac and the wound closed. A gauze pack was placed about the tube, as there was bleeding of the kidney cortex.

FURTHER DISCUSSION

It was a brave attempt in a difficult case. The patient died of sepsis below and above the diaphragm.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Hydronephrosis.
Renal calculi.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Left calculeous pyonephrosis.
Right pyonephrosis.

ANATOMIC DIAGNOSIS

1. *Primary fatal lesions*

Nephrolithiasis.
Chronic pyelonephritis.

2. *Secondary or terminal lesions*

Chronic cystitis.
Cholelithiasis.
Chronic cholecystitis.
Arteriosclerosis.

DR. MALLORY: At the post-mortem examination the left kidney was found to be a large dilated, fluctuant mass 23 by 13 by 11 centimeters. The pelvis was extremely dilated and formed many intercommunicating cysts which were more or less suggestively outlined in the X-ray plate. The small stones had all been removed at the operation, but a large bilobed stone four centimeters long was found tightly wedged in the pelvis, surrounded by dense fibrous adhesions. There was a very small amount of recognizable kidney parenchyma remaining. The right kidney was also slightly swollen. The perirenal fat contained slightly purulent material. The kidney parenchyma was dotted with miliary abscesses, and the pelvis contained a considerable amount of thick purulent secretion. So the right kidney was really not very much better than the left.

The other findings of interest were a gall-bladder containing a considerable number of stones, and an acute, quite early bronchopneumonia, very marked arteriosclerosis, and a quite small atrophic heart weighing only 250 grams.

DR. YOUNG: I think it is of interest that these people can go on occasionally to complete obstruction to the kidneys without apparently knowing it. Whether it is due to the type of patient or whether they have really very few symptoms I am not sure.

DR. CABOT: Do you think anything could have been done for him if you had started six months earlier?

DR. YOUNG: I do not think we could have done much to restore these kidneys, but by removing those stones and giving that kidney a better chance we might have prolonged life for a time. With the other kidney pretty nearly as bad and doing most of the work, the damage would have progressed to a fatal end whatever was done. So we should not have saved much even six months before.

DR. CABOT: Why did he have those infections of the kidneys?

DR. YOUNG: That brings up the whole question of kidney infection. We know that kidneys do excrete bacteria without becoming infected

themselves. Then some condition, often unknown, may lower the resistance of the kidney, as during pregnancy or during a time of generally lowered resistance following illness. Then the infection starts in the kidney, but it will usually stop of itself. In the left side he had a stone, and that kept it going. On the right side there was no evidence of obstruction or stone. So that we do not know why it continued, unless it was kept up by the toxic nephritis supposed to accompany a pus kidney on the other side.

TEACHING NURSES BY CORRESPONDENCE

AN educational program which the Metropolitan Life Insurance Company has adopted in connection with its extensive visiting nurse service has been put in operation.

In no way intended to supplant or supersede the regularly constituted courses in public health nursing, the plan was put in operation largely for the purpose of arousing greater interest along those lines, and it already has had a stimulating effect.

Dr. Lee K. Frankel, in charge of the Metropolitan's welfare and nursing activities, has felt for some time that intensive training by means of correspondence courses and teaching institutes would result in increasing efficiency of the nurses under his supervision and react to the advantage of the company's policyholders, millions of whom have received its visiting nurse service, free of charge.

An interesting experiment was started by Dr. Frankel in 1924. Now, only three years later, his plan has outgrown the experimental stage, and is to be a fixture in the company's general system of training its independent staff nurses for the highly specialized work they are doing in the homes of American wage earners. Correspondence courses have been arranged and teaching institutes will be held twice a year in each of the Metropolitan's nine territories.

Nor is the institute limited to Metropolitan staff nurses, for invitations are sent to such organizations as the Red Cross, State Departments of Health and Visiting Nurse Associations, to have representatives attend.

The institutes have developed such interest through health and welfare organizations that the Metropolitan's plan to hold them in each of its territories twice a year has met with general approval. It is considered an innovation in public work that will make a lasting impression and result in great public benefit.

The welfare work has reached such tremendous proportions that its nursing service has become an important factor in contemporary public health work. More than 4300 cities and towns of the United States and Canada are

covered by 1438 nursing centres. The company's field force numbers about 25,000. And these sales representatives also are being taught to be "messengers of health" through an organized effort to secure their increased co-operation along welfare lines.

AID SENT TO MISSISSIPPI REGION

At a meeting of the heads of the seven states affected by the flood, Mississippi, Louisiana, Tennessee, Arkansas, Kentucky, Missouri and Illinois, with Senior Surgeon McMullen, it was decided that aid for personnel and material should be sought through the different departments of health throughout the country.

On Friday night, April 29, a telegram was received from the Red Cross authorities by the Connecticut State Department of Health asking for assistance in the shape of personnel and biologic supplies for the seven states that are affected by the growing Mississippi flood. The following morning a telegram was forwarded to Dr. John McMullen, Senior Surgeon of the U. S. P. H. S., detailed for Red Cross duty at Memphis, Tennessee, informing him of the aid that Connecticut had in personnel and biologic supplies.

Governor John H. Trumbull directed that the State Department of Health ascertain what aid was needed and if practical, to forward aid in any way to help out the sister states that are in such dire distress.

On Saturday night, April 30, replies were received from Surgeon McMullen as to what personnel was needed at the present time and within a few hours Dr. Howard A. Lanpher, epidemiologist of the Connecticut State Department of Health and Professor Ira V. Hiscock of the Yale School of Public Health were on their way on the Memphis Special to Memphis, Tennessee. It is anticipated that they will probably carry out work in the first states affected by this flood and will be assigned to Arkansas.

If there are any Connecticut physicians who have had experience as epidemiologists or administrative work as health officers, it would be appreciated if they would get in touch by giving their name to Dr. Stanley H. Osborn, Commissioner of Health, State Department of Health for special work in the flood area.—*Bulletin Connecticut State Department of Health.*

THE BOSTON Medical and Surgical Journal

Established in 1828

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

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SUBSCRIPTION TERMS: \$5.00 per year in advance, postage paid for the United States, \$7.50 per year for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 126 Massachusetts Ave.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

STATISTICS RELATING TO THE WORK OF MEDICAL REGISTRATION BOARDS

THE *Journal of the American Medical Association* in the State Board number of April 30 ult. publishes statistics setting forth facts with respect to the licensure of physicians in the United States.

To any one conversant with the operation of state laws which have to do with medical practice, the information at hand in this publication is especially interesting because it shows the steady progress which is taking place in providing better medical service for the people. It is unfortunate that many doctors do not find this evidence worthy of careful study for it is convincing testimony of the unselfish, careful, and persistent work of the council on medical education and the association of medical colleges. The publicity given to the problems of medical education, the results of examinations by state boards, and the effect of the scandals in a few states have been important factors in raising the standards throughout the country so that now all but nine of the real medical schools of this country are recognized as warranting the distinction of being in Class A.

The two class C medical schools in Massachusetts are, according to the tabulation, only recognized in Massachusetts and the District of Columbia. The Massachusetts Board of Registration is not now accepting graduates from the St. Louis College of Physicians and Surgeons. This correction should be made in the tabulation by the American Medical Association.

The determination to bring about the elimination of the inefficient or fraudulent medical school is being augmented by a very large spirit of cooperation in the laity. Progress has been so marked since 1912 that it is reasonable to predict that another five years will witness the dissolution of almost all of the remaining discredited schools or the adoption of changes in the curriculum which will warrant a higher classification.

The result of the work of the American Medical Association in this field is impressive, and stands as one of its greatest accomplishments. The contest with selfish and fraudulent interests has been fair and open but withal uncompromising. The Association has seemed to feel that the strongest weapon of attack has been found to be publicity and appeal to intelligence. Details have been left to each state so far as legislation is concerned. Some states have been quick to adopt high educational standards, some have been laggards, and nearly all have compromised in some ways. Some states with strict educational requirements, both medical and premedical, have been compelled to give comparatively free rein to the cults. It may have been that the desire to elevate the standards of practice by the graduates of medical colleges early in the program made it necessary to avoid too active opposition to the cults. The idea has been expressed that if doctors left the cults alone they could get almost any legislation respecting the requirements of graduation from medical schools, but Massachusetts, for example, found that her cherished ambition to maintain a single standard for all who practice any form of the healing art would be imperilled if class legislation were adopted.

The American Medical Association has never seemed to feel interested in publishing statistics of the teaching institutions controlled by the cults although ready at all times to express its disapproval of their forms of practice. It has endorsed the highest possible standards of medical education but these standards were regarded as too ambitious by some because certain useful schools were forced to retire from the field. This result perhaps warranted to some extent the criticism which has been made. Great accomplishments sometimes justify sacrificing minor interests although many will feel that Dartmouth and Bowdoin should never have been deprived of recognition.

In this region we regret that Massachusetts has not been permitted to adopt standards

equal to those in New York, Pennsylvania, and several other states, but we are proud of our success in not having been obliged to capitulate when confronted with demands for class legislation for the cults as such. We believe that the Board of Registration has kept out a large number of undesirable practitioners who, under class legislation, would now be treating the people of this Commonwealth. Comparatively few of the Class C Graduates are now succeeding in securing the right to practice in Massachusetts.

Although the *Journal of the American Medical Association* has never seemed to approve of the single standard, which is admittedly low, much has been accomplished under this plan. The term single standard as used in Massachusetts means that all who apply for the right to practice the healing art must, before being admitted to examination, submit evidence of a reasonable knowledge of the fundamental sciences which underlie the practice of medicine and demonstrate to the examining board ability to deal with the ordinary problems of practice. The board of registration is not given authority to discriminate against any therapeutic theory. This plan has protected the people of Massachusetts to a considerable extent from the wholly incompetent cultist so numerous in some states.

The *Journal of the American Medical Association* has never given Massachusetts the credit of having any premedical requirement although the state law provides that applicants must have had a premedical education equivalent to that required for graduation from a high school and the Board of Registration is acting in conformity thereto. We are not even given the same rating as Delaware, Missouri, Nebraska, Nevada, and Ohio although the legal requirements seem to be the same.

In the editorial of the *Journal of the American Medical Association* in the same issue with the statistics, the criticism of Colorado, Massachusetts, and Texas appears in the statement "As a matter of fact no osteopathic college has entrance requirements equal to those of medical schools, no osteopathic college has equally expert teachers," etc. We beg to suggest that this does not seem to be exactly correct. If the statement could be modified to compare the osteopathic schools with Class A medical schools, there would be no criticism of the assertion.

The menace from outside the medical profession which the *Journal of the American Medical Association* now sees in the offing is not a new one. It has been at the gates of all states for years, and so far as actual practice is concerned has broken its way into more than half of them. Many cultists originally registered under class legislation are practicing outside the specified limitations under the law, and it is difficult to secure conviction of such irregularity.

With all of its wisdom and great achievements, the American Medical Association can afford to be fair even in minor details. We believe in, and will support the greatest Medical Society in the world, but we feel that we may properly discuss the common problems of medicine with candor and propriety without creating the suspicion of disloyalty.

RABIES AND ITS CONTROL

THE papers have reported a controversy carried on by a citizen of Quincy and Dr. George H. Bigelow, State Commissioner of Health, with respect to the control of rabies.

One citizen of Quincy is reported to have scouted the belief of the Health Commissioner in the danger of rabies and has reported that another citizen of that municipality is ready to demonstrate his belief that the disease is only a figment of the imagination by submitting to the bite of a dog diagnosed as afflicted with rabies. We predict that if his offer is accepted he will be more unfortunate than the man who attempted to prove that smallpox is not contagious. This doubter was permitted to visit patients with smallpox and about two weeks later was found to have contracted the disease. Fortunately he recovered. The man bitten by a rabid dog has a small chance of recovery. If he finally demonstrates his skepticism, he is to be pitied.

Fortunately we have a Commissioner who is not troubled with mental blindness, and is not timid. His statement published in the *Boston Herald* is as follows:

WHAT DEPARTMENT WANTS

"(1)—The law requiring licensing of all dogs should be rigidly enforced. This means the destruction of all unlicensed dogs. This is never carried out. In addition to doing away with the stray dogs, which are the principal cause of all the trouble in spreading this disease, this procedure will increase appreciably the town revenue, since whenever interest in licensing dogs is increased through the presence of rabies and the procedure is enforced, the number of licenses issued has increased 50 per cent. or more.

"(2)—When rabies becomes prevalent in a community the law allowing muzzling or restraint of all dogs for 90 days should be utilized. Of these two, restraint is actually the only effective method. This is usually indifferently enforced. One of the influential citizens generally considers restraint of his 'little darling' unnecessary and other citizens see no reason why the sauce for the goose should not be sauce for the gander. The trouble in Quincy began when the police, contrary to all precedent, enforced the ordinance. Whenever the impossible happens and restraint is enforced for three months, the citizens justly feel that as far as their com-

munity is concerned rabies has been eliminated. Then a stray infected dog runs in from an adjacent town where restraint has not been practiced and the whole laborious procedure must be repeated. However, in our present state of knowledge in regard to this disease restraint must be rigidly enforced when rabies appears in the community.

"(3)—All persons interested in protecting their dogs through inoculation should be encouraged to do so. There is still much to learn about this procedure so that it would not be sound to make it compulsory as yet, but at least the product on the market which has been passed by the federal government will not produce the disease and there is an increasing volume of evidence that it will protect, for at least a year. This is the most hopeful aspect of control since it aims to produce an immune dog population.

"The condition is not dissimilar to that existing in regard to smallpox. This disease was never controlled by quarantine alone, but the general use of vaccination which produces an immune population has sounded the death knell of smallpox. It is, however, interesting that the more effective a preventive procedure the more difficult it is to maintain public interest in it because its very effectiveness removes the fear produced by the presence of a disease and as a people we are more influenced by fear than by cerebration.

"The above procedure as outlined has the indorsement of the division of animal industry of the department of conservation as well as the department of public health."

THIS WEEK'S ISSUE

CONTAINS articles by the following authors:

THORNDIKE, AUGUSTUS, JR., M.D. Harvard Medical School 1921. Junior Assistant Surgeon to the Children's Hospital, Boston, Mass. His paper is entitled "Duodenal Atresia and Stenosis in Infancy." Page 763. Address: 66 Commonwealth Avenue, Boston.

PALFREY, FRANCIS WILSON, A.B.; M.D. Harvard Medical School 1902. Visiting Physician, Boston City Hospital; Instructor in Medicine, Harvard Medical School. His subject is "Series of Cases of Gastrointestinal Hemorrhage." Page 768. Address: 311 Beacon Street, Boston, Mass.

MASON, N. R., A.B.; M.D. Harvard Medical School 1901; F.A.C.S.; Chief of Staff, Gynecological and Obstetrical Service Boston City Hospital; Instructor in Obstetrics and Gynecology Harvard Medical School. Address: 483 Beacon Street, Boston, Mass. Associated with him is

O'BRIEN, FREDERICK W., A.B.; M.D. Tufts Medical School 1911. Visiting Roentgenologist

Boston City Hospital, Cambridge City Hospital and Boston Sanatorium. Associate Professor Roentgenology, Tufts College Medical School. Address: 465 Beacon Street, Boston, Mass. They write on "The Treatment of Malignant and Near Malignant Gynecological Cases." Page 769.

COBB, STANLEY, A.B.; M.D. Harvard Medical School 1914. Professor of Neuropathology Harvard Medical School; Visiting Neurologist Boston City Hospital. Address: Harvard Medical School. Associated with him is

MUNRO, DONALD, A.B.; M.D. Harvard Medical School 1916. F.A.C.S.; Member Boston Society of Neurology and Psychiatry. Instructor in Surgery and Assistant in Anatomy Harvard Medical School. Junior Visiting Physician Boston City Hospital. Address: 15 Bay State Road, Boston. They write on "Two Cases of Brain Tumor." Page 772.

BINNEY, HORACE, M.D. Harvard Medical School 1901. Surgeon in Chief Boston City Hospital; Assistant Professor of Surgery Tufts College Medical School. His subject is "Subphrenic Abscess Following Appendix Abscess During Pregnancy." Page 773. Address: 403 Beacon Street, Boston, Mass.

SCANNELL, D. D., A.B.; M.D. Harvard Medical School 1900. F.A.C.S.; Surgeon-in-Chief Boston City Hospital. Address: 475 Commonwealth Avenue, Boston. Associated with him is

MALLORY, F. B., A.B.; M.D. Harvard Medical School 1886. Pathologist to the Boston City Hospital. Address: Boston City Hospital. They write on "Osteogenic Sarcoma of Left Femur." Page 774.

EMERSON, KENDALL, A.B.; M.A.; M.D. Harvard Medical School 1901; F.A.C.S.; Chief of the Surgical Service and Orthopedic Surgeon Memorial Hospital, Worcester, Mass.; Member of the New England Surgical Society; President of the Massachusetts Tuberculosis League. Subject: "The President's Address Before the Annual Meeting of the Massachusetts Tuberculosis League." Page 775. Address: 21 High Street, Worcester, Mass.

MORRISON, HYMAN, A.B.; M.D. Harvard Medical School 1908. Assistant in Medicine Harvard Medical School, Physician to Out-Patients Massachusetts General Hospital, Visiting Physician, Beth Israel Hospital. Address: 483 Beacon Street, Boston. Associated with him is

GOLDBERG, BERNARD I., B.S.; M.D. Harvard Medical School 1922. Assistant Visiting Physician and Physician to Out-Patients Massachusetts Homeopathic Hospital, Assistant in Cardiology Boston University School of Medicine. Address: 441 Commonwealth Avenue, Boston. They write on "Progress in Hematology." Page 777.

MISCELLANY

REPORT OF THE CHIROPRACTIC BILL IN OHIO

A BILL was introduced in the last legislature in Ohio providing for a state board of chiropractic examiners, but was defeated.

The proponents now plan to carry the case before the people at the November election.

The referendum petition must be signed by about 72,000 persons living in at least two thirds of the counties of the State.

The *Ohio State Medical Journal* makes a strong appeal to the people of that State to defeat this appeal.

LYNN CANCER CLINIC

On April 22, 1927, a cancer clinic was opened for patients at Lynn Hospital under the direction of the Cancer Committee of the Lynn Medical Fraternity in coöperation with the State Department of Health, which will furnish a consultation service composed of members of the profession renowned for their skill in this field of medicine. This service at the first clinic was assured by the presence of Dr. George A. Leland, Jr., of the staff of the Collis P. Huntington Hospital, and the State Department of Health was represented by the Commissioner, Dr. George H. Bigelow.

The number of patients on the first day was ten. Of these six were found to be suffering from cancer.

In conjunction with the Cancer Committee, which consists of Dr. William T. Hopkins, Chairman; Dr. Nathaniel P. Breed, Secretary; Dr. Orrin C. Blair, Dr. John W. Trask, and Dr. Eugene B. Dolloff, a Lay Committee, composed of about twenty citizens of greater Lynn, will act as a committee on Cancer Education in the hope of bringing more cancer cases under adequate treatment at an early period of the disease than has before been possible.

The clinic will be held at Lynn Hospital each Friday morning at 10 o'clock.

The opening of the clinic was signalized by a luncheon at Hunt's Grill at 12:30 o'clock, on April 22, at which addresses were delivered by Dr. Bigelow, Dr. Leland, Rev. John A. Sheridan and others interested in the effort at better cancer control.

WM. T. HOPKINS, *Reporter*.

RECENT DEATHS

DORR—DR. HENRY ISAIAH DORR died at his home in Winchester, April 24, 1927, aged 82.

He was born in Ipswich, December 28, 1844, the son of Jonathan and Lydia Clark Dorr. In 1862 he enlisted as private in Company D, Seventeenth Infantry, and served during the Civil War. He took part in all the battles of the Potomac.

After the war he entered Harvard College. Later he transferred to Philadelphia and in 1876 was grad-

uated from the Philadelphia Dental College with the degree of D.D.S. He served for 20 years as a professor and in 1883 received the degree of M.D. from Jefferson Medical College at Philadelphia. In 1924 Temple University of Philadelphia conferred upon him the degree of Sc.D.

He was a member of the American Medical Association through his membership in the Medical Society of Pennsylvania, the American Association for the Advancement of Science, the Royal Societies Club of London, Eng., the Philadelphia County Medical Society and the Harvard Club of Boston. He retired seven years ago and has been living at his home in Winchester since.

He is survived by his wife, Mrs. Sarah J. Dorr.

FINCK—DR. HARRY PAUL FINCK of Brookline and Boston, a Fellow of the Massachusetts Medical Society, was found dead in a bathtub at his home in Brookline, April 26, 1927. The medical examiner reported it as a case of accidental drowning.

He was 33 years old. Dr. Finck was a graduate of Harvard in the class of 1915 and of Harvard Medical School in 1918. He practiced ophthalmology, otology, laryngology, and rhinology at an office in Boston. He was married.

OBITUARY

DR. EDWARD S. SULLIVAN

DR. EDWARD SCANLAN SULLIVAN of Concord, N. H., died of pneumonia in that city on April 9, 1927, after an illness of only a few days. Born in Concord on January 25, 1892, he was graduated from Phillips Exeter Academy in 1910, from Harvard College in 1914 and from the Harvard Medical School in 1919. He served his internship at the Boston City Hospital as a member of the enlisted Medical Reserve Corps, thereby postponing the receipt of his medical degree for one year. Since 1919, until his untimely death, he has engaged in general practice in Concord, associated with his father, a distinguished New Hampshire physician, who has for many years been secretary of the New Hampshire Medical Society.

Dr. Sullivan was a member of the American Medical Association, the New England Pediatric Society, the New Hampshire Medical Society, the New Hampshire Surgical Club and the Merrimack County Medical Society. In the Harvard Club of New Hampshire and in the Associated Harvard Clubs of New England he took an active part. He had many friends among his fellow members of the Harvard Club of Boston. He belonged to the Wonolancet Club in Concord, to the American Legion and for several years had been a faithful worker on the staff of the Margaret Pillsbury General Hospital. He attended St. John's Roman Catholic Church.

Dr. Sullivan's immediate relatives are his widow, formerly Miss Jessica Brown of Cambridge, to whom he was married on January 20, 1921; his father and mother, Dr. and Mrs. D. E. Sullivan, and his brother, Paul.

Dr. Sullivan's outstanding qualities were his

inherent friendliness, his high degree of medical intelligence and his industry. Untiring efforts in his professional tasks were in part responsible for his death; for when his final illness came, resisting little, he passed on, "Calm as a voyager to some distant land." His colleagues respected him and deplore his early death; his patients, for whom he gave his life, loved him.

CORRESPONDENCE

A DOCTOR'S DANGER

April 18, 1927.

Editor, Boston Medical and Surgical Journal:

I think you should call attention editorially to the circumstances surrounding the death of Dr. Casper Pendola of Brooklyn recently. He was assaulted and murdered by a man named Caruso following the death of Caruso's child from diphtheria. While there was a great deal about it in the New York papers I do not suppose that it attracted much notice outside of this region. Caruso's child had been sick with diphtheria for several days when Dr. Pendola was called. He administered a dose of antitoxin and said he would call the next day. He remarked to his wife when he returned home what a terrible case of diphtheria it was. Some hours after this, the child became worse and the father called another doctor, the child dying just previous to his arrival. The next morning when Dr. Pendola called, the father, Caruso, lured him into a side room, attacked him with the butcher knife and murdered him.

At the trial Caruso's defence was that the druggist told him Pendola had given the child too large a dose of antitoxin, which the druggist denied on the stand. There was a great outcry on the part of the followers of Bernarr McFadden and other cultists, and a great deal of sob stuff about the poor, grief-stricken father, insane with grief, etc. In spite of all this, however, and much to the encouragement of all of us, the jury brought in a verdict of first degree murder and Caruso was sentenced to the chair. The sense of decency has not yet died in the breast of the American people and in spite of the efforts of cultists the family doctor in his efforts to battle disease still commands the respect and affection of his people.

Yours respectfully,

E. C. McCulloch, M.D.

COMMENTS ON PROFESSOR WILSON'S LETTER

Boston, May 7, 1927.

Editor, Boston Medical and Surgical Journal:

It was naturally with great interest that I read Professor Wilson's communication commenting on the survey reports of Professor Murray P. Horwood, M. I. T., Professor C. E. Winslow of Yale University, and Dr. Haven Emerson of Columbia University, and criticizing the statistical findings. I have no doubt but that there are bound to be faults and inaccuracies to a certain extent at least in every collection of statistics involving as in this case an immense subject such as the incidence of tuberculosis in such a large city as Boston.

I am firmly convinced, however, that Professor Horwood's findings are in the main true, that in our report he presented a true picture of the unsatisfactory situation in Boston as far as tuberculosis is concerned, and that his recommendations backed up as they were by both Dr. Winslow and Dr. Emerson are right and proper. The mere fact that the most important ones have already been carried into effect is sufficient evidence of this.

I was somewhat doubtful lest Professor Wilson's criticisms which I understand are purely referable to the statistics alone might be construed as a criticism of the recommendations of these three men,—hence this letter.

Very truly yours,

JOHN B. HAWES, 2ND,

President, Boston Tuberculosis Association.

NOTICES

RESULTS OF THE MARCH, 1927, EXAMINATION CONDUCTED BY THE MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

PHYSICIANS REGISTERED BY EXAMINATION

- Balch, India Hunt, 210 Riverway, Suite No. 63, Boston, Mass.
 Brewer, Charles, 54 Forest Street, Springfield, Mass.
 Brooke, Percy Albert, City Hospital, Worcester, Mass.
 Brown, Wesley Charles, Flandford, Mass.
 Costa, Raymond Rapozo, 57 Orange Street, Fall River, Mass.
 Downey, Francis Timothy, 185 Church Street, Marlboro, Mass.
 Dukeshire, Corinne, 470 East Third Street, South Boston, Mass.
 Elfvn, Henry Hjalmar, 78 Peterboro Street, Boston, Mass.
 Epstein, Joshua, Salem Hospital, Salem, Mass.
 Fenn, George Kingsley, 33 Buell Street, Burlington, Vt.
 Ferestine, Morris, Carney Hospital, South Boston, Mass.
 Finland, Maxwell, 353 Charles Street, Boston.
 Glenn, Charles Lloyd, 20 Nye Avenue, Brockton, Mass.
 Gospodarek, Francis Stanislaus, 229 Third Street, Albany, N. Y.
 Hiebert, Abraham Ezra, 36 Hull Street, Boston, Mass.
 Hurovitz, Oscar, Long Island Hospital, Boston, Mass.
 Hurxthal, Lewis Marshall, 84 Grozier Road, Cambridge, Mass.
 Johnston, Malcolm Kazar, 2 Bay State Road, Worcester, Mass.
 Kelley, John Bernard, City Hospital, Worcester, Mass.
 Kruger, Rudolph Arthur Samuel, 1182 Warren Avenue, Campello, Mass.
 Kundert, Elizabeth, State School, Belchertown, Mass.
 Lizio, Benjamin Franklin, Pottsville Hospital, Pottsville, Pa.
 Luther, Elliot Horton, Massachusetts General Hospital, Boston, Mass.
 McLaughlin, Cecil Clephus, City Hospital, Worcester, Mass.
 McLaughlin, Hugh Joseph, United States Coast Guard Base No. 5, East Boston, Mass.
 MacKay, William Mackintosh, Sassaquin Sanatorium, New Bedford, Mass.
 Mauriello, Francesco Paride Cramine Domenico, 570 Cambridge St., Cambridge.
 Miller, Erwin Curtis, Massachusetts General Hospital, Boston, Mass.
 Quinn, Karl Vincent, State School, Belchertown, Mass.
 Smith, Roland Leonard, Waterbury Hospital, Waterbury, Conn.
 Sperl, Amalia, Auburndale, Mass.
 Steere, Walter Eastman, 10 Holmfield Avenue, Mattapan, Mass.
 Wiestling, Helen Merwin, 82 East Concord Street, Boston, Mass.
 Yakovlev, Paul, Monson State Hospital, Palmer, Mass.

Number examined	57
Registered	34
Rejected	23
Per cent rejected	40+

REGISTERED ON CERTIFICATION BY THE NATIONAL BOARD
Faxon, Henry Hardwick, 37 Hedge Road, Brookline,
Mass.

Peterson, Edward Lawrence, Jr., Massachusetts General
Hospital, Boston, Mass.

COLLEGE AND YEAR OF GRADUATION OF REJECTED
APPLICANTS

Middlesex College of Medicine and Surgery: 1922-23-
23-23-24-25-25-26. Total rejected, 9.

Massachusetts College of Osteopathy: 1923-25-25-26-
26-26-26. Total rejected, 7.

University of Montreal: 1924-25.

Kirksville College of Osteopathy and Surgery: 1927-
27.

Kansas City University of Physicians and Surgery:
1926.

American School of Osteopathy: 1921.

University of Buffalo: 1919.

Middlesex College of Medicine and Surgery is credited with the registration of three graduates, the Massachusetts College of Osteopathy with seven, and the Boston College of Physicians and Surgeons with two.

THE GRADUATING EXERCISES OF THE
CAMBRIDGE HOSPITAL SCHOOL FOR
NURSES

THE Trustees of the Cambridge Hospital have issued invitations for the Graduating Exercises of the Training School for Nurses which will take place Tuesday evening, May seventeenth, at eight-fifteen o'clock, in Brattle Hall, Harvard Square.

REPORTS AND NOTICES OF
MEETINGS

PRELIMINARY PROGRAM, FIFTY-FIRST
ANNUAL SESSION OF THE AMERICAN
ASSOCIATION FOR THE STUDY OF
THE FEEBLEMINDED

THE Fifty-first Annual Session of the American Association for the Study of the Feeble-minded will be held in Cincinnati, Ohio, June 4, 5 and 6, 1927, at Hotel Sinton.

Saturday morning, June 4, 9:30 A. M.—In-
vocation. Address of Welcome. Response to
Address of Welcome. Appointment of Com-
mittees. Notices and Reports. Papers on the
Medical and Psychological Aspect of Mental
Deficiency.

Saturday afternoon, June 4, 2:00 P. M.—Pa-
pers on the Medical and Psychological As-
pect of Mental Deficiency.

Saturday evening, June 4, 7:30 P. M.—Pa-
pers on Social Service as Applied to Mental
Deficiency.

Sunday afternoon, June 5, 3:00 P. M.—Pa-
pers on Education as Related to Mental De-
ficiency.

Sunday evening, June 5, 8:00 P. M.—Annual
Dinner. President's Address. Meeting of the
Council.

Monday morning, June 6, 9:30 P. M.—Pa-
pers on Institutional Activities.

Monday afternoon, June 6, 2:00 P. M.—Pa-
pers on Criminology as Related to Mental De-
ficiency.

List of contributors to the program: Earl D.
Bonds, A. N. Bronfenbrenner, M. O. Blakes-
lee, E. A. Doll, H. H. Ramsay, C. M. Hincks,
Mabel A. Matthews, K. B. Jones, R. A. Greene,
A. L. Jacoby, R. W. Foley, Paul Popenoe, M.
Vanuxem, Meta L. Anderson, Mabel Fernald,
George Veith, B. W. Baker, Joseph Ladd, W.
Overholser, H. C. Parsons.

Notices—(1) Make your hotel reservations
now. (2) Follow directions explicitly and you
will be able to obtain half-fare rates for you
and your family for your return trip. (3) Mem-
bers arriving at Cincinnati are requested to go
to the registration desk at the Hotel Sinton to
register and validate their tickets. The regi-
stration desk will be found in the meeting room.
(4) Applications for membership must be in
the hands of the secretary before Monday morn-
ing, June 6, at 9 o'clock. (5) The American
Psychiatric Association will meet in Cincinnati
at the Hotel Sinton, May 31, June 1, 2 and 3,
1927.

HOWARD W. POTTER, M.D., *Sec'y-Treas.*

REPORT OF THE ANNUAL MEETING OF
THE HAMPDEN DISTRICT MEDICAL
SOCIETY

Editor of the BOSTON MEDICAL AND SURGICAL
JOURNAL

Massachusetts Avenue
Boston, Massachusetts.

Dear Sir:

The annual election of officers of the Hamp-
den District Medical Society was held April
26 at the Springfield Academy of Medicine.
The new officers are:

E. A. Bates, Springfield, President; E. P.
Bagg, Jr., Holyoke, Vice President; H. L.
Smith, Springfield, Secretary-Treasurer.

Censors: A. J. Douglas, Westfield, Super-
visor; F. H. Allen, Holyoke; R. S. Benner,
Springfield; F. Holyoke, Holyoke; George
Steele, Springfield.

Commissioner of Trials, George H. Janes,
Westfield.

Nominating Councillors: E. P. Bagg, Jr.,
Holyoke; J. B. Atwater, Westfield, (Alternate).

Councillors: J. P. Atwater, Westfield; E. P.
Bagg, Jr., Holyoke; J. M. Birnie, Springfield;
A. L. Damon, North Wilbraham; E. L. Davis,
Springfield; A. J. Douglas, Westfield; H. D.
Gafney, Ware; M. B. Hodskins, Monson;
George Henderson, Holyoke; E. A. Knowlton,
Holyoke; A. G. Rice, Springfield; J. P.
Schneider, Palmer; H. L. Smith, Springfield;
H. W. Van Allen, Springfield.

The nominating councillor was instructed to

propose the name of J. M. Birnie for president of the Massachusetts Medical Society.

The literary program consisted of a paper entitled "The Diagnosis and Treatment of Some Orthopedic Conditions of Infancy and Early Childhood." This was delivered by R. N. Hatt. Case histories with moving pictures and discussions were given by G. D. Hough.

Following the meeting a supper was served.
J. A. WHITNEY.

BOSTON MEDICAL HISTORY CLUB

THE annual meeting of the Boston Medical History Club was held at the Boston Medical Library, April 29, 1927.

The following officers were elected for next year: President, Dr. Fred B. Lund; Vice-President, Dr. Charles F. Painter; Secretary-Treasurer, Dr. Henry R. Viets; Curator, Mr. James F. Ballard; Councillors: Drs. John W. Farlow, F. T. Lewis, and George Sarton.

The first paper of the evening, by C. J. S. Thompson, M.B.E., and read by Dr. J. W. Courtney, was entitled, "Surgical Instruments Designed by Lord Lister." This communication, illustrated with lantern slides, showed a number of instruments now at the Royal College of Surgeons, designed and used by Lord Lister.

The second paper, "Medical Incunabula Contained in the Bullard Collection," was read by Mr. James Ballard. He briefly reviewed the early history of printing and showed to the members of the Club many volumes from the splendid collection of Dr. William Norton Bullard. One hundred and twelve of these early printed books are now in the Boston Medical Library. These, added to the books already owned by the Library, make approximately one hundred and fifty volumes printed before 1500. The books have been collected with great care by Dr. Bullard so as to include the most important books and avoid duplication.

MINUTES OF MEETING OF BOARD OF DIRECTORS, APRIL 26, 1927

THE Board of Directors of Massachusetts Tuberculosis League Inc., met, according to the Constitution, immediately following the Annual Meeting of the Corporation on Tuesday, April 26, 1927, at 2:30 P. M., at Hotel Statler, Boston. The following directors were present: Mr. Walter S. Barr, Dr. George H. Bigelow, Dr. Vincent Y. Bowditch, Dr. Walter P. Bowers, Dr. Henry D. Chadwick, Dr. I. J. Clarke, Dr. Hilbert F. Day, Dr. Francis P. Denny, Mr. Arthur Drinkwater, Mr. Frederic Edwards, Dr. Kendall Emerson, Dr. Harold A. Gale, Mr.

William B. Geoghegan, Mr. William N. Goodell, Mrs. E. Frank Guild, Dr. John B. Hawes, 2nd, Dr. William O. Hewitt, Dr. George S. Hill, Professor Murray P. Horwood, Mrs. Edythe James, R.N., Mr. Arthur Kendrick, Dr. Frederick T. Lord, Dr. Olin S. Pettingill, Dr. Nahum R. Pillsbury, Dr. Sumner H. Remick, Mrs. George A. Ricker, Mr. John Ritchie, Mrs. Mabel Greeley Smith, Dr. Roy J. Ward, Miss Margaret Weir, Rev. C. P. Wellman, Mrs. Reginald Heber White, Dr. John M. Wise, Mr. Arthur V. Woodworth, Mrs. John D. Henry.

The reading of the minutes of the previous meeting were dispensed with on motion.

Dr. Harold A. Gale, Chairman of the Nominating Committee, reported nominations for the Executive Committee as follows:

Dr. Francis P. Denny (to succeed himself)—to serve for three years.

Dr. Henry D. Chadwick (to succeed himself)—to serve for three years.

It was voted unanimously to elect the nominees as presented by the Chairman of the Nominating Committee. The Secretary was instructed to cast one ballot and, upon doing so, the President declared the nominees elected for the terms indicated.

Dr. James S. Stone, President of the State Medical Society, addressed the meeting on "Some Lessons from the Tuberculosis Fight."

Dr. George H. Bigelow, State Commissioner of Public Health, on invitation of the President, spoke on the desirability of legislation to protect the milk supply in the Commonwealth.

The President presented to the meeting Mrs. Rufus P. Williams, founder of the Cambridge Anti-Tuberculosis Association.

The President welcomed back to the Commonwealth Dr. Sumner H. Remick, Director of the Division of Tuberculosis of the State Department of Public Health. Dr. Remick spoke, indicating his pleasure at returning to Massachusetts and pledging coöperation to the League and its affiliated organizations on behalf of his Division.

Mr. Frederick D. Hopkins, Executive Secretary of the National Tuberculosis Association, on invitation of the President, conveyed the good wishes of the National Association to the Massachusetts Tuberculosis League.

The President, on behalf of members of the Board of Directors, officers and members of the affiliated organizations and the Staff of the League presented a gift to Miss Gladys M. Rhodes in recognition of her services to the League during a period of five and a half years.

The meeting closed with the singing of America.

Signed: FRANK KIERNAN,
Clerk of the Corporation.

Approved: KENDALL EMERSON,
President.

THE MASSACHUSETTS STATE DENTAL SOCIETY ANNUAL MEETING

At the Annual Meeting of this Society Dr. Richard Norton, Jr., was elected President; Dr. William H. Gilpatrick, Secretary; and Dr. Joseph T. Paul, Treasurer.

The meeting, which was held at the Hotel Statler, was well attended and many interesting papers were read.

It is planned to have the State Society affiliate with the American Dental Association.

MASSACHUSETTS GENERAL HOSPITAL CLINICAL MEETING

A CLINICAL meeting of the Staff of the Massachusetts General Hospital will be held in the Administration Building, Fruit Street, on Monday, May 16, 1927, at 8:15 P. M.

PROGRAM

1. Diagnosis and Treatment of a Diaphragmatic Hernia. Dr. Carl A. Hedblom, Professor of Surgery, Northwestern University.

2. Ethylene Anesthesia. Dr. Hugh Cabot, Professor of Surgery, University of Michigan.

A cordial invitation to attend these meetings is extended to physicians, medical students, nurses and social workers.

COMMITTEE ON HOSPITAL MEETINGS.

A MEETING OF THE NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY

THERE will be a meeting of the New England Otological and Laryngological Society at the Weston Golf Club, Weston, Mass., on May 12, 1927. Golf and other sports begin at 2:00 P. M. with dinner at 7:00 P. M. after which will come the following program:

1. Dr. E. H. Place: "Intubation In Acute Non-infectious Inflammatory Oedema Of The Larynx."

2. Dr. E. A. Crockett: "Some Views On Medical Education Particularly Of The Specialist In Oto-Laryngology."

3. Dr. H. P. Mosher: "The Diagnostic Oesophageal Bougie."

4. Dr. G. L. Tobey: "Impressions of Medical Practice As Seen In The South."

CALVIN B. FAUNCE, Secretary,
320 Commonwealth Ave., Boston, Mass.

NEWS ITEMS

VACCINATION REQUIRED IN HARVARD UNIVERSITY—The Overseers of Harvard University voted May 9, 1927, that beginning with the academic year 1927-1928 a certificate of successful vaccination satisfactory to the Oliver Professor of Hygiene shall be required of all new students allowed to register in any department of the university. This vote is, we believe, due to the efforts of Dr. Alfred Worcester.

MEMBERSHIP IN THE AMERICAN NURSES' ASSOCIATION—The membership in this organization has been growing rapidly, now having reached 61,729. Since 1926 6,751 have joined.

New York has the largest membership with 8,913, Pennsylvania second with 6,928, Illinois third with 4,455. Massachusetts has 3,431.

BOOK REVIEWS

History of Cardiology. By LOUIS FAUGERES BISHOP and JOHN NEILSON, JR. Medical Life Press, New York, 1927, 71 pages.

This book presents a brief, sketchy and incomplete history of the development of cardiovascular knowledge from the time of Plato up to the present century. It is interesting as far as it goes, but more care could have been expended on it to advantage. An additional 50 pages containing further details of the work of some of the men mentioned and an account of some workers not included would have made this contribution much more worth while.

Artificial Rejuvenation and Voluntary Change of Sex, According to Professor Steinach. By N. E. ISHLONSKY. Translated by Henry S. Penn, M.D. Published by the Toodwood Publishing Company, Lawrence, Mass. 172 pages.

This book is a resume of Steinach's well-known experiments on gland transplantation and ligature of the vas deferens. Aside from a few references to experiences of his own, the author contributes to the subject nothing except some observations of a highly speculative nature. He is so obviously prejudiced in favor of Steinach's work that his comments lack any value as a critical review of it. One's confidence in the book is not heightened by the numerous faults in construction and the many misspelled words.

Ventilation and Health; the New Hygiene of Fresh Air. By THOMAS D. WOOD, A.M., M.D., and ETHEL M. HENDRIKSEN. New York: D. Appleton & Co.

Dr. Wood's volume has especial importance at the present day, because there has been and is a great deal of discussion about ventilation. There are differences of opinion between some commercial interests and the leaders of thought in the philosophy of ventilation. Till today sanitarians have been the pioneers in the new paths, and now Dr. Wood, whose good wine needs no bush, and an able collaborator, Mrs. Hendriksen, present the story in direct and popular terms. The twelve chapters of the book are addressed not only to the medical world but to laymen, and the principles are voiced in unmistakable terms.

There is a great deal about the ventilation of schoolhouses, but the factory, the office building and the home are by no means neglected. With reference to the school, it is the cobbler's wife

who is going about badly shod. Education, which seeks to give practical information to pupils and students, here falls below its own standards in two particulars. The health education in the school curriculum even today depends almost entirely upon private enterprise permitted by public school authorities to work within the school rooms. There are a few examples where text books on health are employed, and in Massachusetts, two cities, Newton and Malden, are leading the others with what may be termed laboratory methods of health instruction.

In the matter of construction of schoolhouses, the conditions in the country are chaotic. Regulations by legislatures, boards of health, departments of labor and others, in the different states, are so far apart in building requirements, that a successful schoolhouse in one state would be condemned as unfit for use in another and sometimes a neighboring commonwealth.

The National Education Association has sought to remedy some of the incongruities in local regulations by a scientific consideration of the whole subject of construction of school buildings. The report of its committee on Planning and Construction of Schoolhouses was published last year. It was the result of thorough investigations by a competent committee, of which Mr. Frank Irving Cooper, architect, of Boston, was chairman, the research work being carried on largely in his office. The report has had immediate application and has not been without effect on the building regulations of important cities and states.

What was done for the school building by Mr. Cooper and his fellow workers is paralleled by the work of Dr. Wood and Mrs. Hendriksen, in the specialty of ventilation.

The earlier chapters of the book devote themselves to definitions. The question of what really constitutes "fresh air," is taken up and discussed, and in this connection the authors review some outgrown hypotheses of ventilation, including the carbon di-oxide idea which although discredited more than sixty years ago, is still the "dead hand" in a good deal of current procedure. "Crowd poison," of which the black hole of Calcutta is the most commonly quoted example and the requirement of "thirty cubic feet per child per minute," still on the books in a good many communities, are shown to be relics of a bygone age.

Turning to the modern idea of window ventilation in its various forms, the book discusses them, and frankly upholds the principle. A chapter is devoted to the absurdity and even iniquity of existing laws or regulations. "Twenty-four states legislate against fresh air," is a sub-title in the discussion of ventilation of school houses, and the contention seems well sustained, not only by the opinion of supporting experts in medicine and sanitation, but by noteworthy examples with practical results. Some states

have specific prohibition of "gravity-direct-indirect systems" of ventilation, thus shutting the door to possible revelations of scientific research.

It is towards the amelioration of such absurd and unstandardized conditions that the volume must be an efficient agent. It places in the hands of educators, school committees, schoolhouse commissions and factory managers, to say nothing of the general public, facts that they can understand and appreciate.

Chapter VII deals with factory conditions. It is of interest to realize that establishments in which efficiency is one of the main studies on the part of the management, are so often entirely at fault in the matter of modern ventilation. It is a fundamental fact that factory buildings are not constructed as a rule, to admit readily the requirements of up-to-date ventilation, and the great structures of steel and concrete, make its introduction difficult. For a concrete example Dr. Wood notes that hours of sickness among employees have been cut in half in one of the Kodak buildings, following the introduction of window ventilation. Office buildings are seldom ventilated according to the best ideas of today. Banks, which furnish to their customers great open spaces oftentimes restrict their employees to cubicles or to mezzanines in which there is lack of real fresh air. Hospitals not infrequently are ventilated by means not in accord with the best current knowledge on the subject.

In maintaining his theses, which will seem to many as radical, Dr. Wood brings forward a notable list of authorities. Mrs. Hendriksen visited England, and in conferences with Dr. Leonard Hill and Dr. H. M. Vernon of London, caught for the benefit of American readers the best and latest in English thought and knowledge. Dr. Chapin of Providence, Winslow and Huntington of Yale, Dr. George T. Palmer of the American Child Health Association and our own Dr. Rosenau are quoted.

There are chapters on instruments for testing ventilation, and on means for the education of the general public in the matter. A glossary and a good index serve to round out a treatise, simple and strong in its presentation, which can not fail to have good results. The book is well printed and well illustrated.

High Blood Pressure. J. F. HALLS DALLY.
2nd edition. Publishers, William Wood & Co., N. Y., 1926.

This small volume is a practical manual of blood pressure measurement containing discussions of the physiology, pathology, symptomatology, and treatment of hyperpiesis. It does not mention, however, the very significant work pointing to the importance of the circulation of the vasomotor center in the determination of the systemic blood pressure.

The recording of the pressure by the auscultatory method which is the author's choice, corresponds with the approved usage in this country. Too little emphasis is laid upon the phenomenon of the auscultatory gap which may be a confusing factor unless the air pressure in the armlet is inflated well above the highest systolic level suspected.

A few of the author's observations are of interest. He mentions MacCordick's statement that calcified arteries are not rigid during the life but that the calcareous material is in the condition of unset mortar which hardens only in the acid change of the body after death. He objects to the use of the term "hypertension" meaning high pressure, as "tension" can apply only to the coats of the vessels and not to the blood except in "an abstruse mathematical sense."

Two rules for estimating normal blood pressure have a certain usefulness:

1. "Simple Rule for calculating Standard Diastolic Arterial Pressure (Halls Dally). Taking standard diastolic pressure at age twenty as 80 mm. Hg, for each five years above twenty up to and including age eighty add 2 mm. Hg.

2. Simple Rule for calculating Standard Systolic Arterial Pressure (Halls Dally). For ages twenty up to sixty, standard systolic pressure equals 120 plus one-fifth of the age. At age sixty standard systolic pressure is 135, and for each year above this up to and including age eighty add 1 mm. Hg."

He states that "a systolic pressure of less than 100 mm. Hg. in an otherwise healthy man is almost certainly due to excessive smoking." And again in regard to cerebral accidents, "if a patient with perilously high pressure expresses himself as feeling particularly fit, then is the time for sudden desperate events."

In suggesting dietary treatment he says "my own view is that far more benefit accrues from lessening the total food intake to the minimum metabolic need than by protein restriction," other treatment for various types of high pressure includes psychotherapy, rest, breathing and resistance exercises, massage, diaphoresis, x-ray, high frequency and diathermic currents, ultra-violet rays, lumbar puncture, venesection, baths, and various drugs. Directions for therapy are rather optimistic.

The book suffers, as do many volumes printed in England, from poor binding especially as regards the illustrations. A few errors appear in the bibliography, which consists of 209 references. On the whole, however, it is a book which can be safely recommended.

The Beloved Physician—Sir James MacKenzie. A biography by R. MacNair Wilson. With a Photogravure. 1926, London. John Murray, Albermarle St., W. to His wife and daughter, Dorothy, Fellow workers with him

and to the memory of the Joy Girl, his daughter, Jean, whose death so sorely hurt him. Printed in Great Britain by William Clowes & Sons, Ltd., London.

PREFACE

"I have tried, in these pages which follow, to describe a great man.

If it may seem that some of the passages of the book are inspired by bitterness or unkindness or sarcasm, I would have my reader know that all these are directed first and most of all against myself. For I was of that company who worked with him; and yet I did not grasp his meaning nor his aims till the day was far spent. Only his goodness, in that he labored to enlighten me through many months and years, opened my dull eyes.

This man was not as other men. His criticisms and his strictures were spoken because, in his soul, he knew and felt the need to speak them. He loved that profession which he so signally adored, with a deep and passionate love, was jealous of its honour, bold in its defense. But he saw the weakness which beset it, and raised his voice to warn it of its danger.

For myself, I owe him all of that little that I know of medicine. Held him in love and reverence. I have written of him as an humble follower, writing of his Master.

I wish to take this opportunity of thanking Sir William MacKenzie, K. C., Sir James MacKenzie's distinguished brother, for the invaluable help he has given to me, and also of expressing my deep indebtedness to Lady MacKenzie and Miss Dorothy MacKenzie for those intimate lights on home and family life which are of the essence of any study of character.

R. M. WILSON, 1st Feb., 1926."

After the preface comes a foreword of two pages entitled: "The Beloved Physician";

"The room was dark, towards evening, but a fire burned in the grate, casting its cheerful light on the face of my companion, Sir James MacKenzie. He sat, leaning forward in his chair, eagerly, with that quick enthusiasm of word and look which is commonly associated only with youth. His tones were serene in their confidence.

"It is extremely difficult for many medical authorities to understand my point of view . . . I have described it as fully as I can . . . I think that we have made progress. Perhaps twenty years hence. . . ."

He broke off. A look of suffering gathered in those fearless eyes.

"When I talk of these subjects now it is apt to bring on the pain."

Silence fell between us, the silence of London houses, which is set, always, against the rhythm of the city's life. The firelight gave me his grand features once more; that truly noble brow, a temple worthy of the mind which it sustained, the rugged strength of his nose and mouth;

above all, the kindness of his eyes. He was smiling into the firelight. Then he spoke again.

"I am not afraid of death," he said simply. And then, a man with angina pectoris is like one of those old martyrs, confined in a room, the walls of which gradually folded inwards and crushed him. . . ."

The smile had not faded from his lips, nor the kindness from his eyes.

.

When I rose to leave him, he switched on the lights and came with me to the door of the room. His tall figure stooped a little, but that was the only mark which the fell disease had set on him.

.

No wonder his working class patients in the Northern town called him "the beloved physician" in those far-off days before his name rang through the world as the maker of a new conception of the physicians' art.

"MacKenzie was a great doctor, the greatest, I believe, of our generation. He was a great man of science, a great observer, a great thinker, a great controversialist. But over and above all these things he was a great man, a great friend, true in heart, noble in spirit, and dauntless in courage."

CHAPTER XLV

"He rallied a little and was advised to come to London.

.

The final months were made dreadfully hard to bear by the anguish which he suffered, attack of pain succeeding attack of pain.

Christmas came, and the New Year. He knew that he had come to the end, and foretold the period of death with wonderful certainty. The figure of Death, so long defied, drew close to his side. There was one last seizure, and then a period of gentle sleep. In the night of the 25th and 26th of January 1925, the bravest and truest man I ever knew went out, softly and serenely, to his rest."

MacKenzie was in every truth a great doctor, and a great teacher. He demonstrated finally and for all time that true Research is not confined within the rigid walls of Hospital or Laboratory, and that the greatest of all fields, the most fruitful for results are to be found in the practice of good clinicians, and in the unlimited number of the poor, sick in their own humble and often unsanitary homes. For this proof of a fact long accepted by all except Laboratory men, yet seldom utilized by those who should utilize it most, the general medical public, and eventually the lay public should be most truly grateful. Mr. Wilson is a loving and enthusiastic biographer; other biographers might well learn from it as to size; he has produced a work which is well nigh perfect and should be read by every doctor in America.

It is a well constructed book of 300 pages, clearly printed on good paper. An index, rather incomplete, is added.

International Clinics Volume 1. 37th Series. March 1927. J. P. Lippincott Co., Philadelphia.

The editors of *International Clinics* continue to be successful in obtaining a wide range of interesting and instructive contributions from competent medical men throughout the world. Among the outstanding features of this volume are clinics by Lewellys F. Barker and Dean Lewis of Baltimore and Prof. Sauerbruch of Munich. W. Wayne Babcock gives an excellent review of biliary surgery. The twenty-two articles cover a very varied list of subjects including diathermy, venereal diseases, psychiatry, heart disease, rectal conditions and a review of the progress of medicine.

Medical Science for Everyday Use. By SHIELDS WARREN, A.B., M.D. Lea & Febiger, Philadelphia and New York, 1927. 178 pages.

The book is a small, well written volume on subjects of current medical interest. A large variety of topics are discussed. There are short chapters on, "Looking After the Man on the Job," "The Health of School Children," and "The Way Germs Work," as well as sections devoted to the more common clinical entities, pneumonia, diabetes, hay fever, cancer, etc.

These articles formerly appeared in the *Boston Sunday Herald*; for their more permanent preservation they have been revised and rewritten.

Dr. Warren writes in a clear, forceful manner and in a style which can be easily understood by the average person not intimately associated with medical science. More important than style, however, is his common-sense attitude towards health and disease. It is this attribute which makes his publication the soundest book of its type which has come to the attention of the reviewer.

Stammering and Its Treatment. SAMUEL D. ROBBINS, A.B., A.M., Director, Boston Stammerers' Institute, Member American Psychological Association, Fellow of the American Association for the Advancement of Science. Boston, Mass. Boston Stammerers' Institute, 1926.

In this short book the author demonstrates the factors of fear and habit in the connection of stammering, and shows the circulating disturbances to which these sufferers are subjected when speaking,—the cerebral congestion and compensatory diminution of circulation in the extremities. The importance of relaxation, concentration, habit and auto-suggestion is stressed. Various therapeutic exercises are given in great detail.